

FCC 47 CFR MPE  
Report

FCC ID:2BXGL-400FT

# RF Exposure Report

## FCC 47 CFR MPE

### Maximum Permissible Exposure

## 1. Maximum Permissible Exposure Applicable Standards

According to KDB 447498 D01 General RF Exposure Guidance v06, 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 limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

### 1.1. Limits for Maximum Permissible Exposure (MPE)

#### (a) 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 Times   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                                                                      |
| 1500-10000            |                                   |                                   | 5                                       | 6                                                                      |

#### (b) 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 Times   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                                                                     |
| 1500-10000            |                                   |                                   | 1.0                                     | 30                                                                     |

Note: f=frequency in MHz; \*Plane-wave equivalent power density

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## 1.2. Maximum Permissible Exposure Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } P_d \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$P_d = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

## 2. Conducted Power Result

| BLE 1M    |           |                   |                   |                   |     |              |          |
|-----------|-----------|-------------------|-------------------|-------------------|-----|--------------|----------|
| Mode/Type | Frequency | Peak Output Power | Peak Output Power | Max Tune-up Power |     | Antenna gain |          |
|           | (MHz)     | (dBm)             | (mW)              | (dBm)             |     | (dBi)        | (Linear) |
| GFSK      | 2402      | 0.12              | 1.028             | 0                 | ± 1 | 1.9          | 1.549    |
|           | 2441      | -0.38             | 0.916             | 0                 | ± 1 | 1.9          | 1.549    |
|           | 2480      | -0.62             | 0.867             | 0                 | ± 1 | 1.9          | 1.549    |

Remark: The Peak Output Power data is derived from the RF test report number mentioned in the title of this document.



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### 3. Calculated Result and Limit

| BLE 1M    |                         |              |          |                              |                                |          |
|-----------|-------------------------|--------------|----------|------------------------------|--------------------------------|----------|
| Mode/Type | Max<br>Tune-up<br>Power | Antenna Gain |          | Power<br>Density             | Limited of<br>Power<br>Density | Result   |
|           | (dBm)                   | (dBi)        | (Linear) | (S)<br>(mW/cm <sup>2</sup> ) | (S)<br>(mW/cm <sup>2</sup> )   |          |
| 2.4G Band |                         |              |          |                              |                                |          |
| GFSK      | 1                       | 0            | 1.000    | 0.00039                      | 1.0                            | Complies |

**Conclusion: So, SAR test is not required**

-----End of RF Exposure Evaluation -----

