

APPENDIX C - RF EXPOSURE EVALUATION

Maximum Permissible Exposure (MPE)

Applicable Standard

According to subpart §1.1310, 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 Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

| (B) Limits for General Population/Uncontrolled Exposure | | | | |
|---|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Averaging Time (minutes) |
| 0.3–1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34–30 | 824/f | 2.19/f | *(180/f ²) | 30 |
| 30–300 | 27.5 | 0.073 | 0.2 | 30 |
| 300–1500 | / | / | f/1500 | 30 |
| 1500–100,000 | / | / | 1.0 | 30 |

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

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

| Operation Modes | Frequency (MHz) | Antenna Gain | | Conducted output power including Tune-up Tolerance | | Evaluation Distance (cm) | Power Density (mW/cm ²) | MPE Limit (mW/cm ²) |
|-----------------|-----------------|--------------|-----------|--|--------|--------------------------|-------------------------------------|---------------------------------|
| | | (dBi) | (numeric) | (dBm) | (mW) | | | |
| WiFi 2.4G | 2412-2462 | 5.73 | 3.74 | 24 | 251.19 | 30.00 | 0.0831 | 1.0 |
| WiFi 5.2G | 5150-5250 | 4.21 | 2.64 | 15 | 31.62 | 20.00 | 0.0166 | 1.0 |
| WiFi 5.3G | 5250-5350 | 4.21 | 2.64 | 15 | 31.62 | 20.00 | 0.0166 | 1.0 |
| WiFi 5.6G | 5470-5725 | 6.45 | 4.42 | 15 | 31.62 | 20.00 | 0.0278 | 1.0 |
| WiFi 5.8G | 5725-5850 | 5.65 | 3.67 | 15 | 31.62 | 20.00 | 0.0231 | 1.0 |
| Bluetooth | 2402-2480 | 5.73 | 3.74 | 7 | 5.01 | 20.00 | 0.0037 | 1.0 |
| BLE | 2402-2480 | 5.73 | 3.74 | 7 | 5.01 | 20.00 | 0.0037 | 1.0 |

1. The Conducted output power including Tune-up Tolerance provided by manufacturer

2. BT/BLE/WiFi can't transmit simultaneously.

Result: The device meet FCC MPE at 20 cm distance