### 5. RF EXPOSURE EVALUATION

# **5.1 MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

### 5.1.1 Applicable Standard

FCC §15.247 (i) & §1.1310 & §2.1091

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 levels in excess of the Commission's guidelines. See §1.1307(b)(1) of this chapter.

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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/cm²)	Averaging Time (minutes)					
0.3-1.34	614	1.63	*(100)	30					
1.34–30	824/f	2.19/f	*(180/f²)	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.

## **5.1.2 Procedure**

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

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

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);

#### 5.1.3 Calculated Result

Operation Modes	Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm²)
		(dBi)	(numeric)	(dBm)	(mW)			
BDR/EDR	2402-2480	1.86	1.53	10	10.00	20	0.0030	1.0
BLE	2402-2480	1.86	1.53	8	6.31	20	0.0019	1.0
Wi-Fi	2412-2462	1.86	1.53	22	158.49	20	0.0482	1.0

Note: The Wi-Fi and Bluetooth can't transmit simultaneously.

**Result:** The device meet FCC MPE at 20 cm distance.

**===== END OF REPORT =====**