5 FCC §15.407(f), §1.1310, §2.1091 – Maximum Permissible Exposure (MPE)

5.1 Applicable Standard

According to subpart 15.407(f)and 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.

(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/f ²)	30			
30–300	27.5	0.073	0.2	30			
300-1500	/	/	f/1500	30			
1500-100,000	/	/	1.0	30			

Limits for Maximun	n Permissible	Exposure	(MPE)	(§1.1310,	§2.1091)
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f = frequency in MHz; * = Plane-wave equivalent power density;

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

Calculated Formulary:

Predication of MPE limit at a given distance

 $S = PG/4\pi R^2$ = 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);

5.2 **RF Exposure Evaluation Result**

MPE evaluation:

Mode	Frequency	Ante	Antenna Gain		p Power	Evaluation	Power	MPE
	Kange (MHz)	(dBi)	(numeric)	(dBm)	(mW)	(cm)	(mW/cm ²)	(mW/cm^2)
WIFI 5G Band 1	5150-5250	4.4	2.754	19.8	95.499	20	0.0523	1
WIFI 5G Band 2	5250-5350	4.4	2.754	20.0	100.000	20	0.0548	1
WIFI 5G Band 3	5470-5725	4.38	2.742	21.2	131.826	20	0.0719	1
WIFI 5G Band 4	5725-5850	4.92	3.105	21.4	138.038	20	0.0853	1
WIFI 2.4G	2412-2462	4.42	2.767	29.5	891.25	20	0.4906	1
BLE	2402-2480	6.08	4.055	1.5	1.413	20	0.0011	1

Mode	Frequency Range	EIRP including Tune-up Tolerance		Evaluation Distance	Power Density	MPE Limit
	(MHz)	(dBm)	(mW)	(cm)	(mW/cm ²)	(mw/cm²)
WIFI 6E	5925-6425	18.5	70.79	20	0.014	1
WIFI 6E	6425-6525	18.5	70.79	20	0.014	1
WIFI 6E	6525-6875	19.0	79.43	20	0.016	1
WIFI 6E	6875-7125	18.5	70.79	20	0.014	1

Note: The Tune-up output power was declared by the Applicant. Wi-Fi and BLE can't transmit simultaneously.

Result: The device compliant RF Exposure at 20cm distances.