

RF EXPOSURE EVALUATION

MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247 (i) and subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

According to KDB 447498 D04 Interim General RF Exposure Guidance

MPE-Based Exemption:

General frequency and separation-distance dependent MPE-based effective radiated power(ERP) thresholds are in Table B.1 [Table 1 of § 1.1307(b)(3)(i)(C)] to support an exemption from further evaluation from 300 kHz through 100 GHz.

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$.
1.34-30	$3,450 R^2/f^2$.
30-300	$3.83 R^2$.
300-1,500	$0.0128 R^2f$.
1,500-100,000	$19.2R^2$.

R is the minimum separation distance in meters

f = frequency in MHz

Result

Mode	Frequency (MHz)	Tune up conducted power [#] (dBm)	Antenna Gain [#]		ERP		Evaluation Distance (m)	ERP Limit (W)
			(dBi)	(dBd)	(dBm)	(W)		
BLE	2402-2480	4	2.5	0.35	4.35	0.003	0.2	0.768
BT	2402-2480	7	2.5	0.35	7.35	0.005	0.2	0.768
2.4G WIFI	2412-2472	25.5	4.37	2.22	27.72	0.592	0.2	0.768
5G WIFI	5150-5250	13.0	4.22	2.07	15.07	0.032	0.2	0.768
	5725-5850	20	4.83	2.68	22.68	0.185	0.2	0.768

Note 1: The antenna gain and Conducted output power including Tune-up Tolerance was declared and provided by the manufacturer

Note 2: BT and 2.4G WIFI can be transmitted simultaneously. 2.4G WIFI and 5G WIFI should not be sent simultaneously.

The ratio= $\text{ERP}_{2.4\text{G Wi-Fi}}/\text{limit} + \text{ERP}_{\text{BT}}/\text{limit} = 0.777 < 1$

Result: Compliant