RF EXPOSURE EVALUATION

MPE-Based Exemption

Applicable Standard

According to 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 exemptionfrom 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

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation:

$$\sum_{i=1}^{a}\frac{P_i}{P_{th,i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{th,j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\leq 1$$

Result

Mode	Frequency (MHz)	Tune up conducted power#(dBm)	Antenna Gain#		ERP		Evaluation Distance (m)	ERP Limit (mW)
			(dBi)	(dBd)	(dBm)	(mW)		
BT	2402-2480	13.0	-4.32	-6.47	6.53	4.50	0.2	768
BLE	2402-2480	10.5	-4.32	-6.47	4.03	2.53	0.2	768
2.4GWi-Fi	2412-2462	24.0	-4.32	-6.47	17.53	56.62	0.2	768
LTE B2	1850-1910	25.0	1.55	-0.60	24.40	275.42	0.2	768
LTE B4	1710-1755	25.0	1.23	-0.92	24.08	255.86	0.2	768
LTE B5	824-849	25.0	-4.62	-6.77	18.23	66.53	0.2	422
LTE B7	2500-2570	25.0	1.78	-0.37	24.63	290.40	0.2	768
LTE B25	1850-1915	25.0	1.55	-0.60	24.40	275.42	0.2	768
LTE B26	814-849	25.0	-4.62	-6.77	18.23	66.53	0.2	417
LTE B38	2570-2620	25.0	1.58	-0.57	24.43	277.33	0.2	768
LTE B41	2496-2690	25.0	1.78	-0.37	24.63	290.40	0.2	768
LTE B66	1710-1780	25.0	1.60	-0.55	24.45	278.61	0.2	768

Note: 1. The tune up conducted power and antenna gain was declared by the applicant.
2. The BT and 2.4G Wi-Fi cannot transmit at same time.
3. 0dBd=2.15dBi

Simultaneous transmitting consideration (worst case):

The ratio= $ERP_{2.4G\ Wi\text{-}Fi}$/limit + $ERP_{LTE\ B7}$/limit = 56.62/768+ 290.40/768 =0.452< 1.0

So simultaneous exposure is compliant.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant