FCC §1.1307 (B) & §2.1091- 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.

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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)(1)(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 ² f.				
1,500-100,000	19.2R ² .				

R is the minimum separation distance in meters f = 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:

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

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Result

Mode	Frequency (MHz)	Tune up conducted power [#]	Antenna Gain#		ERP		Evaluation Distance	ERP Limit
		(dBm)	(dBi)	(dBd)	(dBm)	(mW)	(m)	(mW)
UHF	917-922.2	12.0	-1.75	-3.90	8.10	6.46	0.2	470
BLE	2402-2480	-3.0	0.82	-1.33	-4.33	0.37	0.2	768

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Note: 1. The tune up conducted power and antenna gain was declared by the applicant. 2. The BLE and UHF can transmit at same time. 3. 0dBd=2.15dBi

Simultaneous transmitting consideration (worst case):

The ratio=ERP_{UHF}/limit+ ERP_{BLE}/limit = 6.46/470 + 0.37/768 = 0.014 < 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.