

5. MPE Based Exemption

5.1 Applicable Standard

According to §1.1307(b)(3)(i)

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

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	$19.2R^2$.

5.2 Measurement Result

Radio	Frequency (MHz)	$\lambda/2\pi$ (mm)	Distance (mm)	Exemption ERP (mW)	Maximum Conducted Power including Tune-up Tolerance (dBm)	Antenna Gain (dBi)	ERP		MPE-Based Exemption
							dBm	mW	
2.4GHz WLAN	2412-2462	19.81	200	768	23	2.83	23.68	233.35	Compliant
BLE	2402-2480	19.89	200	768	1	2.28	1.13	1.30	Compliant
BT 3.0	2402-2480	19.89	200	768	5	2.28	5.13	3.26	Compliant
5.2GHz WLAN	5180-5240	9.22	200	768	12.5	2.98	13.33	21.53	Compliant
5.8GHz WLAN	5745-5825	8.32	200	768	12.5	2.98	13.33	21.53	Compliant

Note:

1. The Maximum Conducted Power including Tune-up Tolerance was declared by manufacturer.
2. WLAN and Bluetooth can't simultaneously transmit.
3. ERP= Maximum Conducted Power including Tune-up Tolerance + Antenna Gain -2.15.

Result: The device compliant the MPE-Based Exemption at 20cm distances.