FCC ID: WA2ST4915

According to KDB 447498 D04 Interim General RF Exposure Guidance v01

1. MPE-Based Exemption

An alternative to the SAR-based exemption is provided in § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 ㎑ to 100 ㎓, applicable for separation distances greater or equal to λ/2π, where λ is the free-space operating wavelength in meters. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power. For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form in Appendix B. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in § 1.1310(e)(1).

Table 1 to 1.1307(b)(3)(i)(c) – Single RF Sources Subject to Routine Environmental Evaluation

RF Source Frequency (㎒)	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	0.012 8 $R^2 f$
1 500-100 000	19.2 R^2

2. RF Exposure Test Exemptions for Single Source

Mode	Frequency Range (㎒)	Minimum Separation Distance (㎝)	Maximum Average Target Power (dBm)	Maximum Tune up (dB)	Maximum Average Power (dBm)	Antenna Gain (dBi)	ERP		Threshold ERP	Ratio	Result
							(dBm)	(㎽)	(㎽)		
Bluetooth Low energy	2 402 ~ 2 480	20	-2	1.5	-0.5	1.99	-0.66	0.859	768	0.001	Pass
WLAN (2.4G)	2 412 ~ 2 462	20	12	1.5	13.5	1.99	13.34	21.577	768	0.028	Pass

Mode	Frequency Range (㎒)	Minimum Separation Distance (㎝)	Maximum Average Power (dBm)	Antenna Gain (dBi)	ERP		Threshold ERP	Ratio	Result
					(dBm)	(㎽)	(㎽)		
LTE Band 2	1 850 ~ 1 910	20	22	1.15	21	125.89	768	0.16	Pass
LTE Band 66/4	1 710 ~ 1 780	20	22	1.02	20.87	122.18	768	0.16	Pass
LTE Band 12	699 ~ 716	20	22	-4.72	15.13	32.58	357.89	0.09	Pass
NB-IOT Band 2	1 850 ~ 1 910	20	22	1.15	21	125.89	768	0.16	Pass
NB-IOT Band 66/4	1 710 ~ 1 780	20	22	1.02	20.87	122.18	768	0.16	Pass
NB-IOT Band 85	698 ~ 716	20	22	-4.72	15.13	32.58	357.38	0.09	Pass

Note ;

- Bluetooth Low Energy, WLAN2 and WWAN can't simultaneous transmission at the same time.
- ERP (dBm) = Maximum average output power (dBm) + Antenna gain (dBi) - 2.15 (dB).
- The ERP threshold as the "R must be at least λ/2π" as per 1.1307 (b)(3)(i)(C) table 1
- Maximum average target power is the manufacturer's declared rated power
- Maximum average power = Maximum average target power (dBm) + Maximum tune up (dB).

3. Conclusion: No SAR is required.