

RF Exposure – Justification for Exemption from Routine Evaluation

The minimum separation distance, R (m), to qualify for exemption from routine evaluation for rf exposure as detailed in 1.1307 Table 1 (version of April 2021) must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters.

TABLE 1 TO §1.1307(b)(3)(i)(C)

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

Using the formulas from table 1 the power thresholds at the separation distances specified for the different operating frequencies for this series of devices are:

Calculations to determine ERP thresholds above which routine evaluation for RF exposure would be required.							
<i>Refer to 1.1307 Table 1 for formula.</i>							
f (MHz)	$\lambda/2\pi$ (m)	R = Separation Distance * ¹ (m)	ERP Power threshold (W) at distance R (m)	Output Power (dBm) * ²	Ant Gain + Cable Loss (dBi) * ³	ERP (W) * ³	% of Threshold
4.48	10.66	10.66	19525	47.5	-3	17.2	0%
5.25	9.09		14224	47.5	-3	17.2	0%
13.45	3.55	3.55	240	45.5	-3	10.8	5%
16.10	2.97		168	45.5	-3	10.8	6%
24.45	1.95	2.30	31	45.5	-3	10.8	35%
26.20	1.82		27	45.5	-3	10.8	40%
* ¹ The minimum separation distance to qualify for exemption from routine evaluation for rf exposure as detailed in 1.1307 Table 1 must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters.							
* ² The declared peak conducted output power at the port for this system is 50 W (47 dBm) for 10 MHz and below, and 30 W (45 dBm) for 10 MHz and above, with production tolerance of +0.5 dB.							
* ³ Declared by manufacturer, a maximum gain of 2 dBi normal-mode helical monopole antenna over finite ground plane and a minimum of 5 dB cable loss of RG213 or RG214 between the RF output and the antenna are used. EIRP (dBm) = P (dBm) + Ant Gain (dBi) – Cable Loss (dB) ERP (dBm) = EIRP (dBm) - 2.15 dB							

The ERP for all bands is below the threshold that would require routine evaluation and therefore the system is exempt from routine evaluation when installed with the minimum separation distances detailed in the installation instructions.