



12. Radio Frequency Exposure

12.1 Applicable Standards

<input type="checkbox"/> §1.1307(b)(3)(i)(A)	The available maximum time-averaged power is no more than 1 mW, regardless of separation distance.																																																	
<input checked="" type="checkbox"/> §1.1307(b)(3)(i)(c)	<p>ERP is below a threshold calculated based on the distance , R between the person and the antenna / radiating structure, where $R > \lambda / 2 \pi$.</p> <p style="text-align: center;">TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3">RF Source Frequency</th> <th colspan="3">Minimum Distance</th> <th>Threshold ERP</th> </tr> <tr> <th>f_L MHz</th> <th></th> <th>f_H MHz</th> <th>$\lambda_L / 2\pi$</th> <th></th> <th>$\lambda_H / 2\pi$</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>0.3</td> <td>–</td> <td>1.34</td> <td>159 m</td> <td>–</td> <td>35.6 m</td> <td>$1,920 R^2$</td> </tr> <tr> <td>1.34</td> <td>–</td> <td>30</td> <td>35.6 m</td> <td>–</td> <td>1.6 m</td> <td>$3,450 R^2/f^2$</td> </tr> <tr> <td>30</td> <td>–</td> <td>300</td> <td>1.6 m</td> <td>–</td> <td>159 mm</td> <td>$3.83 R^2$</td> </tr> <tr> <td>300</td> <td>–</td> <td>1,500</td> <td>159 mm</td> <td>–</td> <td>31.8 mm</td> <td>$0.0128 R^2f$</td> </tr> <tr> <td>1,500</td> <td>–</td> <td>100,000</td> <td>31.8 mm</td> <td>–</td> <td>0.5 mm</td> <td>$19.2R^2$</td> </tr> </tbody> </table> <p>Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.</p>	RF Source Frequency			Minimum Distance			Threshold ERP	f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W	0.3	–	1.34	159 m	–	35.6 m	$1,920 R^2$	1.34	–	30	35.6 m	–	1.6 m	$3,450 R^2/f^2$	30	–	300	1.6 m	–	159 mm	$3.83 R^2$	300	–	1,500	159 mm	–	31.8 mm	$0.0128 R^2f$	1,500	–	100,000	31.8 mm	–	0.5 mm	$19.2R^2$
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<input type="checkbox"/> § 1.1307(b)(3)(i)(B).	<p>Device operates between 300 MHz and 6 GHz and the maximum time-averaged power or effective radiated power (ERP), whichever is greater, $\leq P_{th}$</p> $P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}}(d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$ <p>Where</p> $x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$ <p>and</p> $ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$ <p>d = the separation distance (cm);</p>																																																	



12.2 EUT Specification

Frequency band (Operating)	902MHz~928MHz
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>40cm separation)
Antenna diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Evaluation applied	<input type="checkbox"/> Blanket 1 mW Blanket Exemption <input checked="" type="checkbox"/> MPE-based Exemption <input type="checkbox"/> SAR-based Exemption
Remark:	
1. <u>The maximum conducted output power is 25.62 dBm (364.754 mW) at 923.3MHz (with 8dBi antenna gain.) Lora 500K</u>	

12.3 Results

Lora 500K

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Distance (cm)	EIRP (dBm)	ERP (dBm)	ERP (W)	ERP Limit (W)
923.3	25.62	26.12	8	50	34.12	31.97	1.57	2.95

No non-compliance noted.

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