



## 12. Radio Frequency Exposure

### 12.1 Applicable Standards

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



## 12.2 EUT Specification

<b>Frequency band (Operating)</b>	<input type="checkbox"/> WLAN: 2412MHz ~ 2462MHz <input type="checkbox"/> WLAN: 5150MHz ~ 5250MHz <input type="checkbox"/> WLAN: 5250MHz ~ 5350MHz <input type="checkbox"/> WLAN: 5470MHz ~ 5725MHz <input type="checkbox"/> WLAN: 5725MHz ~ 5850MHz <input checked="" type="checkbox"/> Bluetooth: 2402MHz ~ 2480MHz
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation)
<b>Antenna diversity</b>	<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
<b>Evaluation applied</b>	<input type="checkbox"/> Blanket 1 mW Blanket Exemption <input checked="" type="checkbox"/> MPE-based Exemption <input type="checkbox"/> SAR-based Exemption
<b>Remark:</b> The maximum conducted output power is <u>-0.35dBm (0.923mW)</u> at <u>2480MHz</u> (with <u>2.1dBi antenna gain.</u> )	

## 12.3 Result

Channel Frequency (MHz)	Max. Conducted output power (dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max.Tune up e.r.p. Power (dBm)	Max. Tune up e.r.p power (mW)	Limit (mW)
2402-2480	-0.35	0.15	2.10	0.10	1.02	3060

No non-compliance noted.

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