12. Radio Frequency Exposure

12.1 Applicable Standards

<table>
<tr><td>☐
§1.1307(b)(3)(i)(A)</td><td>The available maximum time-averaged power is no more than 1 mW, regardless of separation distance.</td></tr>
<tr><td>☐
§1.1307(b)(3)(i)(c)</td><td>ERP is below a threshold calculated based on the distance , R between the person and t

antenna / radiating structure, where R > λ / 2 π .

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION
<table>
<tr><th colspan="3">RF Source Frequency</th><th colspan="3">Minimum Distance</th><th>Threshold ERP</th></tr>
<tr><td>f_L MHz</td><td></td><td>f_H MHz</td><td>$\lambda_L / 2\pi$</td><td></td><td>$\lambda_H / 2\pi$</td><td>W</td></tr>
<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 R²</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 R²/f²</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 R²</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 R²f</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>19.2R²</td></tr>
<tr><td colspan="7">Subscripts L and H are low and high; λ is wavelength.
From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.</td></tr>
</table></td></tr>
<tr><td>☒
§ 1.1307(b)(3)(i)(B).</td><td>Device operates between 300 MHz and 6 GHz and the maximum time-averaged power or effective radiated power (ERP), whichever is greater, <= Pth

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right)$$ and f is in GHz;

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);</td></tr>
</table>

12.2 EUT Specification

Frequency band (Operating)	☒ WLAN: 2412MHz ~ 2462MHz ☐ WLAN: 5150MHz ~ 5250MHz ☐ WLAN: 5250MHz ~ 5350MHz ☐ WLAN: 5470MHz ~ 5725MHz ☐ WLAN: 5725MHz ~ 5850MHz ☐ Bluetooth: 2402MHz ~ 2480MHz
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation)
Antenna diversity	SISO ☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity MIMO ☐ Single antenna ☒ Multiple antennas ☒ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Evaluation applied	☐ Blanket 1 mW Blanket Exemption ☒ MPE-based Exemption ☐ SAR-based Exemption
Remark: ANT A: The maximum conducted output power is 22.12dBm (162.930mW) at 2437MHz (with 1.97dBi antenna gain.) ANT B: The maximum conducted output power is 22.91dBm (195.434mW) at 2437MHz (with 1.82dBi antenna gain.) ANT A, B: The maximum conducted output power is 24.10dBm (256.790mW) at 2437MHz (with 1.97dBi antenna gain.)	

12.3 Result

SISO ANT B

Modulation Type	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)
11b	2412-2462	22.91	23.41	1.82	23.08	203.24	3060

MIMO

Modulation Type	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)
11ax HE20	2412-2462	24.10	24.60	1.97	24.42	276.43	3060

No non-compliance noted.

Co-Located

Modulation Type	Channel Frequency (MHz)	Max. Conducted output power (dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Distance (cm)	Max.Tune up e.r.p. Power(mW)	Limit (mW)	MPE Ratio	
GFSK	2402-2480	17.40	17.90	1.97	20	59.16	3060.00	0.02	Pass
11ax HE20	2412-2462	24.10	24.60	1.97	20	276.43	3060.00	0.09	
Co-location Total							---	0.11	
ΣMPE ratios Limit							---	1.00	

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