12. Radio Frequency Exposure

12.1 Applicable Standards

☐ §1.1307(b)(3)(i)(A)	The available maximum time-averaged power is no more than 1 mW, regardless of separation distance.
☐ §1.1307(b)(3)(i)(c)	ERP is below a threshold calculated based on the distance, R between the person and the antenna / radiating structure, where R > λ / 2 π.
☒ § 1.1307(b)(3)(i)(B)	Device operates between 300MHz and 6GHz and the maximum time-averag power of effective radiated power (ERP), whichever is greater, <=Pth.

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

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 $R^2 f$
1,500	–	100,000	31.8 mm	–	0.5 mm	19.2R^2

Subscripts L and H are low and high; λ is wavelength.
From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.

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

Where

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

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);

12.1 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	☐ Single antenna ☒ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☒ Tx/Rx diversity
Evaluation applied	☐ Blanket 1 mW Blanket Exemption ☒ MPE-based Exemption ☐ SAR-based Exemption

12.2 Test Result

ANT Type: Dipole, Non-beamforming						
Channel Frequency (MHz)	Max. Conducted output (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)
2412-2462	28.26	28.76	3.67	30.28	1065.53	3060

ANT Type: Dipole, Beamforming						
Channel Frequency (MHz)	Max. Conducted output (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)
2412-2462	24.75	25.25	6.58	29.68	928.23	3060

ANT Type: Patch, Non-beamforming						
Channel Frequency (MHz)	Max. Conducted output (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)
2412-2462	21.98	22.48	7	27.33	540.51	3060

ANT Type: Patch, Beamforming						
Channel Frequency (MHz)	Max. Conducted output (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)
2412-2462	18.68	19.18	10.01	27.04	505.88	3060

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