



8. Radio Frequency Exposure

8.1 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 t antenna / radiating structure, where $R > \lambda / 2 \pi$. 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><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><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></table> Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.	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	$19.2R^2$
RF Source Frequency			Minimum Distance			Threshold ERP																																												
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☒ § 1.1307(b)(3)(i)(B).	Device operates between 300 MHz and 6 GHz and the maximum time-averaged power or effective radiated power (ERP), whichever is greater, $\leq P_{th}$ $P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$ Where $x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$ and $ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$ d = the separation distance (cm);																																																	



8.2 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	☒ 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: The maximum conducted output power is <u>15.69dBm (37.068mW)</u> at <u>2402MHz</u> (with <u>0.75dBi</u> antenna gain.)	

8.3 Result

For ESY1011E

Modulation Mode	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)
GFSK	2402-2480	15.37	15.87	0.79	14.51	28.25	3060

For ESY1511E

Modulation Mode	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)
GFSK	2402-2480	15.51	16.01	1.45	15.31	33.96	3060

For ESY2211E

Modulation Mode	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)
GFSK	2402-2480	15.69	16.19	0.75	14.79	30.13	3060

No non-compliance noted.

**Maximum Permissible Exposure (Co-location)**

For ESY10I1E

Co-Located (BT+2.4G)

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	Pass
GFSK	2402-2480	15.37	15.87	0.79	20	28.25	3060.00	0.009	
11b	2412-2462	23.83	24.33	0.79	20	198.15	3060.00	0.065	
Co-location Total								0.074	
Σ MPE ratios Limit								1.000	

Co-Located (BT+5G)

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	Pass
GFSK	2402-2480	15.37	15.87	0.79	20	28.25	3060.00	0.009	
11ax HE20	5260-5320	19.51	20.01	1.01	20	77.09	3060.00	0.025	
Co-location Total								0.034	
Σ MPE ratios Limit								1.000	

Co-Located (BT+6E)

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	Pass
GFSK	2402-2480	15.37	15.87	0.79	20	28.25	3060.00	0.009	
11ax HE160	6875~7125	11.35	11.85	1.57	20	13.40	3060.00	0.004	
Co-location Total							----	0.013	
Σ MPE ratios Limit							----	1.000	



For ESY15I1E

Co-Located (BT+2.4G)

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	Pass
GFSK	2402-2480	15.51	16.01	1.45	20	33.96	3060.00	0.011	
11b	2412-2462	24.02	24.52	1.45	20	240.99	3060.00	0.079	
Co-location Total								0.090	
Σ MPE ratios Limit								1.000	

Co-Located (BT+5G)

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	Pass
GFSK	2402-2480	15.51	16.01	1.45	20	33.96	3060.00	0.011	
11ax HE20	5260-5320	19.28	19.78	2.2	20	96.16	3060.00	0.031	
Co-location Total								0.042	
Σ MPE ratios Limit								1.000	

Co-Located (BT+6E)

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	Pass
GFSK	2402-2480	15.51	16.01	1.45	20	33.96	3060.00	0.011	
11ax HE160	6875~7125	11.28	11.78	2.52	20	16.41	3060.00	0.005	
Co-location Total							----	0.016	
Σ MPE ratios Limit							----	1.000	



For ESY22I1E
Co-Located (BT+2.4G)

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	Pass
GFSK	2402-2480	15.69	16.19	0.75	20	30.13	3060.00	0.010	
11b	2412-2462	24.15	24.65	0.75	20	211.35	3060.00	0.069	
Co-location Total								0.079	
Σ MPE ratios Limit								1.000	

Co-Located (BT+5G)

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	Pass
GFSK	2402-2480	15.69	16.19	0.75	20	30.13	3060.00	0.010	
11ax HE20	5260-5320	19.31	19.81	1.18	20	76.56	3060.00	0.025	
Co-location Total								0.035	
Σ MPE ratios Limit								1.000	

Co-Located (BT+6E)

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	Pass
GFSK	2402-2480	15.69	16.19	0.75	20	30.13	3060.00	0.010	
11ax HE160	6875~7125	11.61	12.11	1.77	20	14.89	3060.00	0.005	
Co-location Total							----	0.015	
Σ MPE ratios Limit							----	1.000	

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