



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 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></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 ² f	1,500	–	100,000	31.8 mm	–	0.5 mm	19.2R ²
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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 ☒ WLAN: 5955MHz ~6415MHz ☒ WLAN: 6435MHz ~6515MHz ☒ WLAN: 6535MHz ~6855MHz ☒ WLAN: 6875MHz ~7115MHz ☐ 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>11.61dBm (12.11mW)</u> at <u>6985MHz</u> (with <u>1.77dBi antenna gain</u> .)	



8.3. Result

For ESY10I1E- SISO-ANT A

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	$\lambda/2\pi$ (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	6.33	6.83	1.54	8.37	6.22	20	0.802	0.004	0.768
6515	5.29	5.79	1.53	7.32	5.17	20	0.733	0.003	0.768
6715	6.04	6.54	1.43	7.97	5.82	20	0.711	0.004	0.768
7015	7.09	7.59	1.44	9.03	6.88	20	0.681	0.005	0.768

No non-compliance noted

For ESY10I1E- SISO-ANT B

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	$\lambda/2\pi$ (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	5.56	6.06	1.49	7.55	5.40	20	0.802	0.003	0.768
6515	5.25	5.75	1.49	7.24	5.09	20	0.733	0.003	0.768
6715	6.11	6.61	1.35	7.96	5.81	20	0.711	0.004	0.768
7015	7.01	7.51	1.57	9.08	6.93	20	0.681	0.005	0.768

No non-compliance noted.

For ESY15I1E- SISO-ANT A

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	$\lambda/2\pi$ (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	6.48	6.98	1.69	8.67	6.52	20	0.8022	0.004	0.768
6515	5.44	5.94	1.48	7.42	5.27	20	0.73324	0.003	0.768
6715	6.16	6.66	1.54	8.20	6.05	20	0.7114	0.004	0.768
7015	7.24	7.74	1.45	9.19	7.04	20	0.68098	0.005	0.768

No non-compliance noted

For ESY15I1E- SISO-ANT B

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	$\lambda/2\pi$ (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	5.41	5.91	2.52	8.43	6.28	20	0.8022	0.004	0.768
6515	5.11	5.61	2.04	7.65	5.50	20	0.73324	0.004	0.768
6715	5.98	6.48	2.04	8.52	6.37	20	0.7114	0.004	0.768
7015	6.83	7.33	1.88	9.21	7.06	20	0.68098	0.005	0.768

No non-compliance noted



For ESY22I1E- SISO-ANT A

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	$\lambda/2\pi$ (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	6.59	7.09	1.25	8.34	6.19	20	0.802	0.004	0.768
6515	5.57	6.07	1.41	7.48	5.33	20	0.733	0.003	0.768
6715	6.34	6.84	1.41	8.25	6.10	20	0.711	0.004	0.768
7015	7.38	7.88	1.75	9.63	7.48	20	0.681	0.006	0.768

No non-compliance noted

For ESY22I1E- SISO-ANT B

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	$\lambda/2\pi$ (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
5955	5.71	6.21	1.39	7.60	5.45	20	0.802	0.004	0.768
6515	5.43	5.93	0.97	6.90	4.75	20	0.733	0.003	0.768
6715	6.25	6.75	1.29	8.04	5.89	20	0.711	0.004	0.768
7015	7.17	7.67	1.77	9.44	7.29	20	0.681	0.005	0.768

No non-compliance noted.



For ESY10I1E -MIMO

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	$\lambda/2\pi$ (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
6025	11.16	11.66	1.54	13.20	11.05	20	0.7929	0.013	0.768
6465	4.98	5.48	1.53	7.01	4.86	20	0.73891	0.003	0.768
6665	8.40	8.90	1.43	10.33	8.18	20	0.71674	0.007	0.768
6985	11.35	11.85	1.57	13.42	11.27	20	0.6839	0.013	0.768

No non-compliance noted.

For ESY15I1E -MIMO

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	$\lambda/2\pi$ (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
6025	11.28	11.78	2.52	14.30	12.15	20	0.7929	0.016	0.768
6465	7.84	8.34	2.04	10.38	8.23	20	0.7389	0.007	0.768
6665	8.52	9.02	2.04	11.06	8.91	20	0.7167	0.008	0.768
6985	11.47	11.97	1.88	13.85	11.70	20	0.6839	0.015	0.768

No non-compliance noted.

For ESY22I1E -MIMO

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Max. Tune up power (dBm)	Antenna Gain(dBi)	Max. Tune up EIRP (dBm)	Max. Tune up ERP (dBm)	Distance (cm)	$\lambda/2\pi$ (cm)	Max. Tune up ERP (W)	ERP Threshold (W)
6025	11.40	11.90	1.39	13.29	11.14	20	0.7929	0.013	0.768
6465	7.97	8.47	1.41	9.88	7.73	20	0.73891	0.006	0.768
6665	8.66	9.16	1.41	10.57	8.42	20	0.71674	0.007	0.768
6985	11.61	12.11	1.77	13.88	11.73	20	0.6839	0.015	0.768

No non-compliance noted.

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

For ESY10I1E (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	
GFSK	2402-2480	15.37	15.87	0.79	20	28.25	3060.00	0.009	Pass
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 (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	
GFSK	2402-2480	15.51	16.01	1.45	20	33.96	3060.00	0.011	Pass
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 (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	
GFSK	2402-2480	15.69	16.19	0.75	20	30.13	3060.00	0.010	Pass
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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