



8. Radio Frequency Exposure

8.1. Applicable Standards

<input checked="" type="checkbox"/> §1.1307(b)(3)(i)(A)	The available maximum time-averaged power is no more than 1 mW, regardless of separation distance.																																													
<input type="checkbox"/> §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 $R > \lambda / 2 \pi$. <div style="text-align: center;"> TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION </div> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">RF Source Frequency</th> <th colspan="2">Minimum Distance</th> <th>Threshold ERP</th> </tr> <tr> <th>f_L MHz</th> <th>f_H MHz</th> <th>$\lambda_L / 2\pi$</th> <th>$\lambda_H / 2\pi$</th> <th>W</th> </tr> </thead> <tbody> <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>$0.0128 R^2 f$</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> </tbody> </table> <p style="font-size: small;">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>	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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<input type="checkbox"/> § 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, $\leq P_{th}$ $P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$ <p style="text-align: center;">Where</p> $x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$ <p style="text-align: center;">and</p> $ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$ <p style="text-align: center;">$d = \text{the separation distance (cm);}$</p>																																													



8.2. EUT Specification

Frequency band (Operating)	13.553MHz ~ 13.567MHz
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation)
Antenna diversity	<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
Evaluation applied	<input checked="" type="checkbox"/> Blanket 1 mW Blanket Exemption <input type="checkbox"/> MPE-based Exemption <input type="checkbox"/> SAR-based Exemption
Remark:	
<ol style="list-style-type: none"> The maximum Fundamental Emission is <u>65.78dBuV/m at 13.56MHz (with 0dBi antenna gain.)</u> DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance. For mobile or fixed location transmitters, no SAR consideration applied. 	

8.3. Test Results

Channel Frequency (MHz)	Fundamental Emission (dBm)	Antenna Gain (dBi)	Conducted Power (dBm)	Max. Tune up power (dBm)	Fundamental Emission (mW)	Limit (mW)
13.56	-29.45	0.00	-29.45	-28.95	0.001273859	1

Antenna Gain (dBi)	Antenna Gain (linear)	Distance (m)	Fundamental Emission (dBuV/m)	Fundamental Emission (V/m)	Fundamental Emission (W)	Fundamental Emission (dBm)
0	1	3	65.78	0.00194536	0.00000114	-29.45

No non-compliance noted.

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