# 5 FCC §15.407(f), §1.1307(b)(3)(i) – RF Exposure

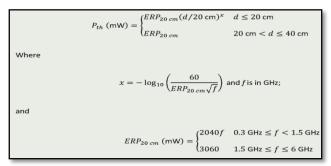
## 5.1 Applicable Standard

According to subpart 15.407(f) and subpart §1.1307(b)(3)(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

For single RF sources (*i.e.*, any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph
(b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph
(b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold *Pth* (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). *Pth* is given by:



(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least  $\lambda/2\pi$ , where  $\lambda$  is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of  $\lambda/4$  or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation					
RF Source frequency (MHz)	Threshold ERP (watts)				
0.3-1.34	1,920 R <sup>2</sup> .				
1.34-30	3,450 R <sup>2</sup> /f <sup>2</sup> .				
30-300	3.83 R <sup>2</sup> .				
300-1,500	0.0128 R <sup>2</sup> f.				
1,500-100,000	19.2R <sup>2</sup> .				

Note: It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) Page 20 of 117

# 5.2 **RF Exposure Evaluation Result**

Project info

Band	Freq (MHz)	Tune-up Power (dBm)	Ant Gain (dBi)	Distances (mm)	Tune-up Power (mW)	ERP (dBm)	ERP (mW)
WIFI 2.4GHz	2412-2462	19	0.85	200	79.43	17.7	58.88
WIFI 5GHz	5180-5825	16	1.53	200	39.81	15.38	34.51

#### § 1.1307(b)(3)(i)(A) methid is not applicable.

#### § 1.1307(b)(3)(i)(C)

Band	λ/2π	Distances	ERP Limit	Result
	(mm)	applies	(mW)	Option C
WIFI 2.4GHz	19.39	apply	768.00	exempt
WIFI 5GHz	8.16	apply	768.00	exempt

The minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates

ERP (watts) is no more than the calculated value prescribed for that frequency

R must be at least  $\lambda / 2\pi$ 

 $\lambda$  is the free-space operating wavelength in meters

Note: Wi-Fi 2.4G and Wi-Fi 5G can't transmit simultaneously.

### Result: The device compliant the MPE-Based Exemption at 20cm distances.