

## RF exposure evaluation

According to §2.5.1, systems operating under the provisions of this section shall be operated in a manner that ensures that the device meets the SAR and/or RF field strength limits of RSS-102.

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance<sup>4,5</sup>

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

Note: For the separation distance ≤ 5mm

For  $f \geq 1.99\text{GHz}$ , The exemption limit is calculated as follow,

$$\text{exemption limit(mW)} = -0.6873f^3 + 8.5147f^2 - 34.1288f + 46.613 \quad f \text{ is GHz}$$

For  $0.3 \leq f \leq 0.835\text{GHz}$ , The exemption limit is calculated as follow,

$$\text{exemption limit(mW)} = -90.91f + 92.91 \quad f \text{ is GHz}$$

So the limit for the common frequency is as follow,

Frequency (MHz)	315	433.93
Limit (mW)	64.27	53.46

### Result

Channel Frequency (MHz)	Electric field strength (dBuV/m)@3m	ERP (mW)	Limit (mW)	Result
315	73.25	0.0000254	64.27	PASS
433.93	75.17	0.0000395	53.46	PASS

Note: computational formula

$$\text{dBuV/m} = 20 \log \text{uV/m};$$

$$\text{EIRP} = P_t * G_t = (E * d)^2 * 30;$$

where

E is the electric field strength in V/m; d is the measurement distance in meters (m)

### Result:

**Because the max tune up power is less than the exemption limit, so No SAR measurement is required.**