

FCC 47 CFR MPE REPORT

Arovast Corporation

Levoit VeSync EverestAir Smart True HEPA Air Purifier

Model Number: LAP-EL551S-AUS

Additional Model: LAP-EL551S-XXXY(X can be A-Z, Y can be none or A-Z)

FCC ID: 2ARBY-EL551S

Applicant:	Arovast Corporation
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Maximum Permissible Exposure

1. Applicable Standards

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 limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

1.1. Limits for Maximum Permissible Exposure (MPE)

(a) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-10000			5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-10000			1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

1.2. MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

2. Conducted Power Result

Mode	Frequency (MHz)	Peak output power (dBm)	Peak output power (mW)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
GFSK	2402	8.97	7.889	8±1	2.38	1.730
	2441	9.19	8.299	9±1	2.38	1.730
	2480	8.91	7.780	8±1	2.38	1.730
8-DPSK	2402	11.43	13.900	11±1	2.38	1.730
	2441	11.65	14.622	11±1	2.38	1.730
	2480	11.39	13.772	11±1	2.38	1.730
BLE	2402	8.73	7.464	8±1	2.38	1.730
	2440	8.86	7.691	8±1	2.38	1.730
	2480	8.59	7.228	8±1	2.38	1.730
IEEE 802.11b	2412	23.32	214.783	23±1	2.38	1.730
	2437	23.41	219.280	23±1	2.38	1.730
	2462	23.19	208.449	23±1	2.38	1.730
IEEE 802.11g	2412	23.23	210.378	23±1	2.38	1.730
	2437	23.13	205.589	23±1	2.38	1.730
	2462	23.49	223.357	23±1	2.38	1.730
IEEE 802.11n HT20	2412	23.51	224.388	23±1	2.38	1.730
	2437	23.34	215.774	23±1	2.38	1.730
	2462	23.63	230.675	23±1	2.38	1.730
IEEE 802.11n HT40	2422	23.46	221.820	23±1	2.38	1.730
	2437	23.15	206.538	23±1	2.38	1.730
	2452	23.29	213.304	23±1	2.38	1.730

3. Calculated Result and Limit

Mode	Target power (dBm)	Antenna gain		Power Density (S) (mW/cm ²)	Limited of Power Density (S) (mW/cm ²)	Test Result
		(dBi)	(Linear)			
2.4G Band						
GFSK	10	2.38	1.730	0.00344	1	Complies
8-DPSK	12	2.38	1.730	0.00545	1	Complies
BLE	9	2.38	1.730	0.00273	1	Complies
IEEE 802.11b	24	2.38	1.730	0.08644	1	Complies
IEEE 802.11g	24	2.38	1.730	0.08644	1	Complies
IEEE 802.11n HT20	24	2.38	1.730	0.08644	1	Complies
IEEE 802.11n HT40	24	2.38	1.730	0.08644	1	Complies

End of Test Report