

## FCC 47 CFR MPE REPORT

Arovast Corporation

Smart Air Purifier

Model Number: LAP-V102S-WUS

Addition Model: LAP-V102S-KUS; LAP-V102S-AUSR; LAP-V102S-XXXX  
(X=A~Z, 0~9 or blank, represents different appearance and sales area)

FCC ID: 2ARBY-LAPV102S

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 <sup>2</sup> )	Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> 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 <sup>2</sup> )	Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> 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)
BLE 1M	2402	5.48	3.532
	2440	6.09	4.064
	2480	5.18	3.296
BLE 2M	2402	5.99	3.972
	2440	6.25	4.217
	2480	5.61	3.639
IEEE 802.11b	2412	20.79	119.950
	2437	20.42	110.154
	2462	21.01	126.183
IEEE 802.11g	2412	17.03	50.466
	2437	16.71	46.881
	2462	17.02	50.350
IEEE 802.11n HT20	2412	18.22	66.374
	2437	17.97	62.661
	2462	18.38	68.865
IEEE 802.11n HT40	2422	15.27	33.651
	2437	14.79	30.130
	2452	15.03	31.842

### 3. Calculated Result and Limit

Mode	Peak output power (dBm)	Target power (dBm)	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW/cm <sup>2</sup> )	Limited of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
				(dBi)	(Linear)			
2.4G Band								
BLE 1M	6.09	6±1	7	3.37	2.173	0.00217	1	Complies
BLE 2M	6.25	6±1	7	3.37	2.173	0.00217	1	Complies
IEEE 802.11b	21.01	21±1	22	3.37	2.173	0.06850	1	Complies
IEEE 802.11g	17.03	17±1	18	3.37	2.173	0.02727	1	Complies
IEEE 802.11n HT20	18.38	18±1	19	3.37	2.173	0.03433	1	Complies
IEEE 802.11n HT40	15.27	15±1	16	3.37	2.173	0.01721	1	Complies

**End of Test Report**