

FCC 47 CFR MPE REPORT

Arovast Corporation

Smart True HEPA Air Purifier

Model Number: LAP-V201S-WUS

Additional Model: LAP-V201S-AUSR, LAP-V201S-followed by
three or four letters

FCC ID: 2ARBY-VITAL200S

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

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

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	6.17	4.1400
	2440	6.98	4.9888
	2480	5.91	3.8994
BLE 2M	2402	6.21	4.1783
	2440	7.33	5.4075
	2480	6.38	4.3451
IEEE 802.11b	2412	15.54	35.8096
	2437	16.26	42.2669
	2462	16.3	42.6580
IEEE 802.11g	2412	19.27	84.5279
	2437	18.16	65.4636
	2462	17.41	55.0808
IEEE 802.11n HT20	2412	18.46	70.1455
	2437	17.02	50.3501
	2462	16.39	43.5512
IEEE 802.11n HT40	2422	15.86	38.5478
	2437	15.25	33.4965
	2452	14.75	29.8538

3. Calculated Result and Limit

Mode	Peak output power (dBm)	Target power (dBm)	MAX 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								
BLE	7.33	7±1	8	3.37	2.1727	0.0027	1	Complies
IEEE 802.11b	16.30	16±1	17	3.37	2.1727	0.0217	1	Complies
IEEE 802.11g	19.27	19±1	20	3.37	2.1727	0.0432	1	Complies
IEEE 802.11n HT20	18.46	18±1	19	3.37	2.1727	0.0343	1	Complies
IEEE 802.11n HT40	15.86	15±1	16	3.37	2.1727	0.0172	1	Complies

End of Test Report