FCC 47 CFR MPE REPORT

Arovast Corporation

Smart True HEPA Air Purifier

Model Number: LAP-V102S-WUS

Additional Model: LAP-V102S-AUSR, LAP-V102S-Followed by up to 4 characters

FCC ID: 2ARBY-VITAL100S

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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.o	30

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

1.2. MPE Calculation Method

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

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	7.53	5.6624
	2440	5.16	3.2810
	2480	5.35	3.4277
BLE 2M	2402	8.22	6.6374
	2440	5.79	3.7931
	2480	5.78	3.7844
IEEE 802.11b	2412	17.43	55.3350
	2437	15.84	38.3707
	2462	13.74	23.6592
IEEE 802.11g	2412	17.83	60.6736
	2437	16.63	46.0257
	2462	14.60	28.8403
IEEE 802.11n HT20	2412	16.90	48.9779
	2437	15.43	34.9140
	2462	13.75	23.7137
IEEE 802.11n HT40	2422	15.50	35.4813
	2437	15.11	32.4340
	2452	13.86	24.3220

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	8.22	8±1	9	3.37	2.1727	0.0034	1	Complies
IEEE 802.11b	17.43	17±1	18	3.37	2.1727	0.0273	1	Complies
IEEE 802.11g	17.83	17±1	18	3.37	2.1727	0.0273	1	Complies
IEEE 802.11n HT20	16.90	16±1	17	3.37	2.1727	0.0217	1	Complies
IEEE 802.11n HT40	15.50	15±1	16	3.37	2.1727	0.0172	1	Complies

End of Test Report