FCC 47 CFR MPE REPORT

Arovast corporation

True HEPA Smart Air Purifier

Model Number: LAP-C601S-WUS

Additional Model: LAP-C601S-XXX(X may be A~Z)

FCC ID: 2ARBY-CORE600S

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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

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

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)	Target power (dBm)	Antenna gain	
					(dBi)	(Linear)
GFSK	2402	7.23	5.284	7±1	1.66	1.466
	2441	7.11	5.140	7±1	1.66	1.466
	2480	7.50	5.623	7±1	1.66	1.466
8-DPSK	2402	10.05	10.116	10±1	1.66	1.466
	2441	10.21	10.495	10±1	1.66	1.466
	2480	9.79	9.528	9±1	1.66	1.466
BLE GFSK 1M	2402	7.68	5.861	7±1	1.66	1.466
	2440	7.51	5.636	7±1	1.66	1.466
	2480	7.46	5.572	7±1	1.66	1.466
IEEE 802.11b	2412	15.82	38.194	15±1	1.66	1.466
	2437	18.31	67.764	18±1	1.66	1.466
	2462	22.25	167.880	22±1	1.66	1.466
IEEE 802.11g	2412	15.31	33.963	15±1	1.66	1.466
	2437	17.87	61.235	17±1	1.66	1.466
	2462	21.87	153.815	21±1	1.66	1.466
IEEE 802.11n HT20	2412	15.49	35.400	15±1	1.66	1.466
	2437	18.04	63.680	18±1	1.66	1.466
	2462	22.01	158.855	22±1	1.66	1.466
IEEE 802.11n HT40	2422	16.84	48.306	16±1	1.66	1.466
	2437	18.63	72.946	18±1	1.66	1.466
	2452	20.96	124.738	20±1	1.66	1.466

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	8	1.66	1.466	0.00184	1	Complies
8-DPSK	11	1.66	1.466	0.00367	1	Complies
BLE GFSK	8	1.66	1.466	0.00184	1	Complies
IEEE 802.11b	23	1.66	1.466	0.05817	1	Complies
IEEE 802.11g	22	1.66	1.466	0.04621	1	Complies
IEEE 802.11n HT20	23	1.66	1.466	0.05817	1	Complies
IEEE 802.11n HT40	21	1.66	1.466	0.03671	1	Complies

End of Test Report