

FCC 47 CFR MPE REPORT

Arovast Corporation

Levoit VeSync OasisMist™ Smart Humidifier

Model Number: LUH-O451S-WUS

Additional Model: LUH-O451S-WUSR, LUH-O451S-XXXY

(XXX may be A-Z, Y may be A-Z or none)

FCC ID: 2ARBY-LV450S

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	7.41	5.508	7 ± 1	3.42	2.198
	2441	8.21	6.622	8 ± 1	3.42	2.198
	2480	8.49	7.063	8 ± 1	3.42	2.198
8-DPSK	2402	10.13	10.304	10 ± 1	3.42	2.198
	2441	10.83	12.106	10 ± 1	3.42	2.198
	2480	11.11	12.912	11 ± 1	3.42	2.198
BLE	2402	7.46	5.572	7 ± 1	3.42	2.198
	2440	8.11	6.471	8 ± 1	3.42	2.198
	2480	8.44	6.982	8 ± 1	3.42	2.198
IEEE 802.11b	2412	22.34	171.396	22 ± 1	3.42	2.198
	2437	23.57	227.510	23 ± 1	3.42	2.198
	2462	23.45	221.309	23 ± 1	3.42	2.198
IEEE 802.11g	2412	22.14	163.682	22 ± 1	3.42	2.198
	2437	22.97	198.153	22 ± 1	3.42	2.198
	2462	23.25	211.349	23 ± 1	3.42	2.198
IEEE 802.11n HT20	2412	22.37	172.584	22 ± 1	3.42	2.198
	2437	23.22	209.894	23 ± 1	3.42	2.198
	2462	23.50	223.872	23 ± 1	3.42	2.198
IEEE 802.11n HT40	2422	22.50	177.828	22 ± 1	3.42	2.198
	2437	22.86	193.197	22 ± 1	3.42	2.198
	2452	23.07	202.768	23 ± 1	3.42	2.198

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	9	3.42	2.198	0.00347	1	Complies
8-DPSK	12	3.42	2.198	0.00693	1	Complies
BLE	9	3.42	2.198	0.00347	1	Complies
IEEE 802.11b	24	3.42	2.198	0.10983	1	Complies
IEEE 802.11g	24	3.42	2.198	0.10983	1	Complies
IEEE 802.11n HT20	24	3.42	2.198	0.10983	1	Complies
IEEE 802.11n HT40	24	3.42	2.198	0.10983	1	Complies

End of Test Report