FCC 47 CFR MPE REPORT

Arovast Corporation

OasisMist1000S Smart Ultrasonic Cool Mist Tower Humidifier

Model Number: LUH-M101S-WUS

Additional Model: LUH-M101S-WUSR, LUH-M101S-Followed by up to 4 characters

FCC ID: 2ARBY-M101S

Applicant:	Arovast Corporation
Address:	1202 N Miller St. Suite A, Anaheim, California 92806, United States
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
Tel: 86-769-83081888-808	

Report Number:	ESTE-R2209164
Date of Test:	Sep. 15-28, 2022
Date of Report:	Sep. 29, 2022

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)
BLE1M	2402	7.01	5.0234
	2440	7.65	5.8210
	2480	7.10	5.1286
BLE2M	2402	7.16	5.2000
	2440	7.91	6.1802
	2480	7.62	5.7810
IEEE 802.11b	2412	18.46	70.1455
	2437	15.93	39.1742
	2462	16.68	46.5586
IEEE 802.11g	2412	17.08	51.0505
	2437	16.46	44.2588
	2462	15.98	39.6278
IEEE 802.11n HT20	2412	16.00	39.8107
	2437	15.56	35.9749
	2462	15.04	31.9154
IEEE 802.11n HT40	2422	15.18	32.9610
	2437	15.14	32.6588
	2452	14.76	29.9226

3. Calculated Result and Limit

Mode	Peak output power (dBm)	Target power（dBm）	MAX Target power（dBm）	Antenna gain		Power Density (S) (mW /cm2)	Limited of Power Density (S) (mW /cm2)	Test Result
				(dBi)	(Linear)			
2.4G Band								
BLE	7.91	7±1	8	3.37	2.1727	0.00273	1	Complies
IEEE 802.11b	18.46	18±1	19	3.37	2.1727	0.03433	1	Complies
IEEE 802.11g	17.08	17±1	18	3.37	2.1727	0.02727	1	Complies
IEEE 802.11n HT20	16.00	16±1	17	3.37	2.1727	0.02166	1	Complies
IEEE 802.11n HT40	15.18	15±1	16	3.37	2.1727	0.01721	1	Complies

End of Test Report