FCC 47 CFR MPE REPORT

Arovast Corporation

Smart Ultrasonic Warm and Cool Mist Tower Humidifier

Model Number: LUH-M102S-WUS

Additional Model: LUH-M102S-WCA, LUH-M102S-Followed by up to 4 characters

FCC ID: 2ARBY-M102S

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.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)
BLE 1M	2402	8.03	6.353
	2440	8.61	7.261
	2480	7.51	5.636
BLE 2M	2402	8.56	7.178
	2440	8.95	7.852
	2480	8.02	6.339
IEEE 802.11b	2412	16.56	45.290
	2437	16.56	45.290
	2462	18.35	68.391
IEEE 802.11g	2412	16.88	48.753
	2437	17.37	54.576
	2462	19.09	81.096
IEEE 802.11n HT20	2412	16.12	40.926
	2437	16.40	43.652
	2462	18.15	65.313
IEEE 802.11n HT40	2422	15.38	34.514
	2437	15.52	35.645
	2452	16.56	45.290

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	8.95	8±1	9	3.37	2.173	0.00343	1	Complies
IEEE 802.11b	18.35	18±1	19	3.37	2.173	0.03433	1	Complies
IEEE 802.11g	19.09	19±1	20	3.37	2.173	0.04322	1	Complies
IEEE 802.11n HT20	18.15	18±1	19	3.37	2.173	0.03433	1	Complies
IEEE 802.11n HT40	16.56	16±1	17	3.37	2.173	0.02166	1	Complies

End of Test Report