FCC 47 CFR MPE REPORT

Arovast corporation

Levoit Smart Hybrid Ultrasonic Humidifier

Model Number: LUH-A602S-WUS

Additional Model: LUH-A602S-WUSR, LUH-A602S-XXXY, X May be A~Z,

Y May be A~Z or none

FCC ID: 2ARBY-LV600S

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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	5.20	3.311	5±1	3.42	2.198
	2441	5.77	3.776	5±1	3.42	2.198
	2480	6.06	4.036	6±1	3.42	2.198
8-DPSK	2402	8.14	6.516	8±1	3.42	2.198
	2441	8.83	7.638	8±1	3.42	2.198
	2480	9.03	7.998	9±1	3.42	2.198
BLE GFSK 1M	2402	5.22	3.327	5±1	3.42	2.198
	2440	5.85	3.846	5±1	3.42	2.198
	2480	6.12	4.093	6±1	3.42	2.198
IEEE 802.11b	2412	21.95	156.675	21±1	3.42	2.198
	2437	22.16	164.437	22±1	3.42	2.198
	2462	22.31	170.216	22±1	3.42	2.198
IEEE 802.11g	2412	21.51	141.579	21±1	3.42	2.198
	2437	21.58	143.880	21±1	3.42	2.198
	2462	21.76	149.968	21±1	3.42	2.198
IEEE 802.11n HT20	2412	21.75	149.624	21±1	3.42	2.198
	2437	21.81	151.705	21±1	3.42	2.198
	2462	21.97	157.398	21±1	3.42	2.198
IEEE 802.11n HT40	2422	22.39	173.380	22±1	3.42	2.198
	2437	22.21	166.341	22±1	3.42	2.198
	2452	22.44	175.388	22±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	7	3.42	2.198	0.00219	1	Complies
8-DPSK	10	3.42	2.198	0.00437	1	Complies
BLE	7	3.42	2.198	0.00219	1	Complies
IEEE 802.11b	23	3.42	2.198	0.08724	1	Complies
IEEE 802.11g	22	3.42	2.198	0.06930	1	Complies
IEEE 802.11n HT20	22	3.42	2.198	0.06930	1	Complies
IEEE 802.11n HT40	23	3.42	2.198	0.08724	1	Complies

End of Test Report