

FCC 47 CFR MPE REPORT

Arovast Corporation

Classic 42-Inch Smart Tower Fan

Model Number: LTF-F422S-WUS

Additional Model: LTF-F422S-WCA, LTF-F422S-Followed by up to 4 characters

FCC ID: 2ARBY-F422S

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

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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)
BLE 1M	2402	11.07	12.794
	2440	11.25	13.335
	2480	9.29	8.492
BLE 2M	2402	11.30	13.490
	2440	11.59	14.421
	2480	9.66	9.247
IEEE 802.11b	2412	16.45	44.157
	2437	16.23	41.976
	2462	18.51	70.958
IEEE 802.11g	2412	16.95	49.545
	2437	17.41	55.081
	2462	19.14	82.035
IEEE 802.11n HT20	2412	15.99	39.719
	2437	16.36	43.251
	2462	18.16	65.464
IEEE 802.11n HT40	2422	15.38	34.514
	2437	15.57	36.058
	2452	16.52	44.875

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	11.59	11±1	12	3.37	2.173	0.00685	1	Complies
IEEE 802.11b	18.51	18±1	19	3.37	2.173	0.03433	1	Complies
IEEE 802.11g	19.14	19±1	20	3.37	2.173	0.04322	1	Complies
IEEE 802.11n HT20	18.16	18±1	19	3.37	2.173	0.03433	1	Complies
IEEE 802.11n HT40	16.52	16±1	17	3.37	2.173	0.02166	1	Complies

End of Test Report