



# FCC 47 CFR MPE REPORT

Arovast Corporation

Tower Fan

Model Number: LTF-F422S-WUSR

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

FCC ID: 2ARBY-F422SR

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 <sup>2</sup> )	Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> 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 <sup>2</sup> )	Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> 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,  $d=0.2\text{m}$ , 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	7.53	5.662
	2440	7.61	5.768
	2480	8.86	7.691
BLE 2M	2402	7.84	6.081
	2440	7.97	6.266
	2480	9.21	8.337
IEEE 802.11b	2412	20.76	119.124
	2437	21.03	126.765
	2462	21.38	137.404
IEEE 802.11g	2412	21.44	139.316
	2437	21.96	157.036
	2462	21.95	156.675
IEEE 802.11n HT20	2412	20.62	115.345
	2437	21.07	127.938
	2462	21.14	130.017
IEEE 802.11n HT40	2422	20.12	102.802
	2437	20.19	104.472
	2452	20.27	106.414

## 3. Calculated Result and Limit

Mode	Peak output power (dBm)	Target power (dBm)	Max Target power (dBm)	Antenna gain		Power Density (S) (mW/cm <sup>2</sup> )	Limited of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
				(dBi)	(Linear)			
BLE	9.21	9±1	10	3.37	2.173	0.00432	1	Complies
IEEE 802.11b	21.38	21±1	22	3.37	2.173	0.06850	1	Complies
IEEE 802.11g	21.96	21±1	22	3.37	2.173	0.06850	1	Complies
IEEE 802.11n HT20	21.14	21±1	22	3.37	2.173	0.06850	1	Complies
IEEE 802.11n HT40	20.27	20±1	21	3.37	2.173	0.05442	1	Complies

**End of Test Report**