



## FCC 47 CFR MPE REPORT

Arovast Corporation

Pedestal Air Circulator Fan

Model Number: LPF-R432S-AUS

Additional Model: LPF-R432S-XXXX

(where "X" may be blank, number from 0 to 9 or letter from A to Z)

FCC ID: 2ARBY-R432SA

|                          |                                                                     |
|--------------------------|---------------------------------------------------------------------|
| Applicant:               | Arovast Corporation                                                 |
| Address:                 | 1775 FLIGHT WAY, SUITE 150 TUSTIN, CA 92782, USA                    |
|                          |                                                                     |
| Prepared By:             | EST Technology Co., Ltd.                                            |
|                          | Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China |
| Tel: 86-769-83081888-808 |                                                                     |

|                 |                              |
|-----------------|------------------------------|
| Report Number:  | ESTE-R2501158                |
| Date of Test:   | Dec. 31, 2024~ Jan. 17, 2025 |
| Date of Report: | Jan. 21, 2025                |

## 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=0.2m, 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            | 8.96                    | 7.870                  |
|                      | 2440            | 5.31                    | 3.396                  |
|                      | 2480            | 2.00                    | 1.585                  |
| BLE 2M               | 2402            | 8.93                    | 7.816                  |
|                      | 2440            | 5.35                    | 3.428                  |
|                      | 2480            | 2.15                    | 1.641                  |
| IEEE 802.11b         | 2412            | 19.16                   | 82.414                 |
|                      | 2437            | 16.79                   | 47.753                 |
|                      | 2462            | 14.31                   | 26.977                 |
| IEEE 802.11g         | 2412            | 19.85                   | 96.605                 |
|                      | 2437            | 17.66                   | 58.345                 |
|                      | 2462            | 15.70                   | 37.154                 |
| IEEE 802.11n<br>HT20 | 2412            | 18.78                   | 75.509                 |
|                      | 2437            | 16.45                   | 44.157                 |
|                      | 2462            | 14.37                   | 27.353                 |
| IEEE 802.11n<br>HT40 | 2422            | 17.74                   | 59.429                 |
|                      | 2437            | 16.17                   | 41.400                 |
|                      | 2452            | 14.85                   | 30.549                 |

### 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 1M            | 8.96                    | 8±1                | 9                      | 2.7          | 1.862    | 0.00294                     | 1                                      | Complies    |
| BLE 2M            | 8.93                    | 8±1                | 9                      | 2.7          | 1.862    | 0.00294                     | 1                                      | Complies    |
| IEEE 802.11b      | 19.16                   | 19±1               | 20                     | 2.7          | 1.862    | 0.03704                     | 1                                      | Complies    |
| IEEE 802.11g      | 19.85                   | 19±1               | 20                     | 2.7          | 1.862    | 0.03704                     | 1                                      | Complies    |
| IEEE 802.11n HT20 | 18.78                   | 18±1               | 19                     | 2.7          | 1.862    | 0.02943                     | 1                                      | Complies    |
| IEEE 802.11n HT40 | 17.74                   | 17±1               | 18                     | 2.7          | 1.862    | 0.02337                     | 1                                      | Complies    |

**End of Test Report**