

## FCC 47 CFR MPE REPORT

Arovast corporation

humidifier

Model Number: LEH-S601S-WUS

Additional Model: LEH-S601S-Followed by up to 4 characters

FCC ID: 2ARBY-LEHS601S

|                          |                                                                     |
|--------------------------|---------------------------------------------------------------------|
| Applicant:               | Arovast corporation                                                 |
| Address:                 | 1202 N Miller St. Suite A, Anaheim, California 92806, United States |
|                          |                                                                     |
| 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=0.2m, 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            | 6.52                    | 4.487                  |
|                   | 2440            | 5.01                    | 3.170                  |
|                   | 2480            | 2.21                    | 1.663                  |
| BLE 2M            | 2402            | 7.01                    | 5.023                  |
|                   | 2440            | 5.53                    | 3.573                  |
|                   | 2480            | 2.69                    | 1.858                  |
| IEEE 802.11b      | 2412            | 18.04                   | 63.680                 |
|                   | 2437            | 17.84                   | 60.814                 |
|                   | 2462            | 15.37                   | 34.435                 |
| IEEE 802.11g      | 2412            | 18.59                   | 72.277                 |
|                   | 2437            | 18.30                   | 67.608                 |
|                   | 2462            | 16.39                   | 43.551                 |
| IEEE 802.11n HT20 | 2412            | 17.71                   | 59.020                 |
|                   | 2437            | 17.31                   | 53.827                 |
|                   | 2462            | 15.46                   | 35.156                 |
| IEEE 802.11n HT40 | 2422            | 16.83                   | 48.195                 |
|                   | 2437            | 16.48                   | 44.463                 |
|                   | 2452            | 15.59                   | 36.224                 |

### 3. Calculated Result and Limit

| Mode              | Peak<br>output<br>power<br>(dBm) | Target<br>power<br>(dBm) | MAX<br>Target<br>power<br>(dBm) | Antenna gain |          | Power<br>Density<br>(S)<br>(mW<br>/cm <sup>2</sup> ) | Limited<br>of<br>Power<br>Density<br>(S)<br>(mW<br>/cm <sup>2</sup> ) | Test<br>Result |
|-------------------|----------------------------------|--------------------------|---------------------------------|--------------|----------|------------------------------------------------------|-----------------------------------------------------------------------|----------------|
|                   |                                  |                          |                                 | (dBi)        | (Linear) |                                                      |                                                                       |                |
| 2.4G Band         |                                  |                          |                                 |              |          |                                                      |                                                                       |                |
| BLE               | 7.01                             | 7±1                      | 8                               | 3.37         | 2.173    | 0.0027                                               | 1                                                                     | Complies       |
| IEEE 802.11b      | 18.04                            | 18±1                     | 19                              | 3.37         | 2.173    | 0.0343                                               | 1                                                                     | Complies       |
| IEEE 802.11g      | 18.59                            | 18±1                     | 19                              | 3.37         | 2.173    | 0.0343                                               | 1                                                                     | Complies       |
| IEEE 802.11n HT20 | 17.71                            | 17±1                     | 18                              | 3.37         | 2.173    | 0.0273                                               | 1                                                                     | Complies       |
| IEEE 802.11n HT40 | 16.83                            | 16±1                     | 17                              | 3.37         | 2.173    | 0.0217                                               | 1                                                                     | Complies       |

**End of Test Report**