

## FCC 47 CFR MPE REPORT

Dongguan Alllike Electronics Co.,Ltd

LED LIGHT ROCK SPEAKER

Model Number: BR95

Additional Model: YY1639

FCC ID: BUQ-BR95

|                          |                                                                     |
|--------------------------|---------------------------------------------------------------------|
| Applicant:               | Dongguan Alllike Electronics Co.,Ltd                                |
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|                          |                                                                     |
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|                 |                         |
|-----------------|-------------------------|
| Report Number:  | ESTE-R2307300           |
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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) |
|----------------|-----------------|-------------------------|------------------------|
| GFSK           | 2402            | 3.37                    | 2.173                  |
|                | 2441            | 1.91                    | 1.552                  |
|                | 2480            | 1.17                    | 1.309                  |
| $\pi$ /4-DQPSK | 2402            | 5.49                    | 3.540                  |
|                | 2441            | 4.05                    | 2.541                  |
|                | 2480            | 3.34                    | 2.158                  |
| 8-DPSK         | 2402            | 5.97                    | 3.954                  |
|                | 2441            | 4.53                    | 2.838                  |
|                | 2480            | 3.89                    | 2.449                  |

## 3. Calculated Result and Limit

| Mode           | Peak<br>output<br>power<br>(dBm) | Target<br>power<br>( dBm<br>) | MAX<br>Target<br>power<br>( dBm ) | Antenna gain |              | Power<br>Density<br>(S)<br>(mW<br>/cm2) | Limited<br>of<br>Power<br>Density<br>(S)<br>(mW<br>/cm2) | Test<br>Result |
|----------------|----------------------------------|-------------------------------|-----------------------------------|--------------|--------------|-----------------------------------------|----------------------------------------------------------|----------------|
|                |                                  |                               |                                   | (dBi)        | (Linear<br>) |                                         |                                                          |                |
| 2.4G Band      |                                  |                               |                                   |              |              |                                         |                                                          |                |
| GFSK           | 3.37                             | 3±1                           | 4                                 | -0.47        | 0.897        | 0.00045                                 | 1                                                        | Complies       |
| $\pi$ /4-DQPSK | 5.49                             | 5±1                           | 6                                 | -0.47        | 0.897        | 0.00071                                 | 1                                                        | Complies       |
| 8-DPSK         | 5.97                             | 5±1                           | 6                                 | -0.47        | 0.897        | 0.00071                                 | 1                                                        | Complies       |

**End of Test Report**