

## **FCC 47 CFR MPE REPORT**

Guangzhou Panyu Juda Car Audio Equipment Co.,Ltd.

BLUETOOTH SPEAKER

Model Number: Sound Piece

FCC ID: ESX-BL5602

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## Maximum Permissible Exposure

### 1、Applicable Standard

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.

#### (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   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 <sup>2</sup> ) | 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

### 2、MPE Calculation Method

$$E \text{ (V/m)} = (30 \cdot P \cdot G)^{0.5} / d \quad \text{Power Density: } P_d \text{ (W/m}^2\text{)} = E^2 / 377$$

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

$$P_d = (30 \cdot P \cdot G) / (377 \cdot d^2)$$

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

### 3、Calculated Result and Limit

| Model  | Frequency<br>(MHz) | Peak<br>output<br>power<br>(dBm) | Peak<br>output<br>power<br>(mW) | Antenna gain |          | Target<br>power<br>( dBm ) | Power<br>Density (S)<br>(mW/cm2) | Limited of<br>Power<br>Density (S)<br>(mW/cm2) | Test<br>Result |
|--------|--------------------|----------------------------------|---------------------------------|--------------|----------|----------------------------|----------------------------------|------------------------------------------------|----------------|
|        |                    |                                  |                                 | (dBi)        | (Linear) |                            |                                  |                                                |                |
| GFSK   | 2402               | 3.253                            | 2.115                           | 0            | 1        | $4 \pm 1$                  | <b>0.00063</b>                   | 1                                              | Compiles       |
|        | 2441               | 4.443                            | 2.782                           | 0            | 1        | $4 \pm 1$                  | <b>0.00063</b>                   | 1                                              | Compiles       |
|        | 2480               | 4.778                            | 3.005                           | 0            | 1        | $4 \pm 1$                  | <b>0.00063</b>                   | 1                                              | Compiles       |
| 8-DPSK | 2402               | 1.843                            | 1.529                           | 0            | 1        | $2 \pm 1$                  | <b>0.00040</b>                   | 1                                              | Compiles       |
|        | 2441               | 3.756                            | 2.375                           | 0            | 1        | $4 \pm 1$                  | <b>0.00063</b>                   | 1                                              | Compiles       |
|        | 2480               | 4.323                            | 2.706                           | 0            | 1        | $4 \pm 1$                  | <b>0.00063</b>                   | 1                                              | Compiles       |