

FCC 47 CFR MPE REPORT

Microlab Electronics Co.,Ltd.

Bluetooth Speaker

Model Number: DS6

FCC ID: OR8-DS6

Prepared for : Microlab Electronics Co.,Ltd.

South Baozi Rd., Shenzhen Microlab Industrial Park ,
Shenzhen 518122 ,China

Prepared By : EST Technology Co., Ltd.

Santun(guantai Road), Houjie Town, DongGuan City,
GuangDong, China.

Tel: 86-769-83081888-808

Report Number: ESTE-R1605022

Date of Test : April 04 - May 03, 2016

Date of Report : May 06, 2016



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 ²) | 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 ²) | 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

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

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

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

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

| Mode | Freq. (MHz) | Peak output power (dBm) | Peak output power (mW) | Target power (dBm) | Max Target power (mW) | Antenna gain | | Power Density (S) (mW /cm ²) | Limited of Power Density (S) (mW /cm ²) | Test Result |
|-----------|----------------|----------------------------------|---------------------------------|--------------------------|--------------------------------|--------------|----------|--|---|----------------|
| | | | | | | (dBi) | (Linear) | | | |
| GFSK | 2402 | 2.155 | 1.642 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| | 2441 | 3.560 | 2.270 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| | 2480 | 1.652 | 1.463 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| π/4-DQPSK | 2402 | 0.619 | 1.153 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| | 2441 | 2.136 | 1.635 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| | 2480 | -0.136 | 0.969 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| 8-DPSK | 2402 | 1.107 | 1.290 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| | 2441 | 2.511 | 1.783 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| | 2480 | 0.286 | 1.068 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| BLE-GFSK | 2402 | 2.970 | 1.982 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| | 2440 | 3.710 | 2.350 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |
| | 2480 | 2.080 | 1.614 | 1±3 | 2.512 | 0 | 1 | 0.00050 | 1 | Compiles |

Note: The Bluetooth BDR&EDR and Bluetooth BLE mode cannot Simultaneous transmissions.