

# Maximum Permissible Exposure Evaluation

## FCC ID: 2AGGT4B1512

### 1. Client Information

**Applicant** : Austin-Whitman Mfg. Group LLC  
**Address** : 508 Performance Rd. Mooresville, NC 28115  
**Manufacturer** : Tongxiang Welldragon Co., Ltd.  
**Address** : No.9 East Park Road, Tudian, Tongxiang, Zhejiang, China P.C

### 2. General Description of EUT

<b>EUT Name</b>	: Bluetooth Subwoofer(Speaker Box)	
<b>Models No.</b>	: CS-P80A150V4BT4, CS-P80A150V4BT4-HB, CS-P80A150V4BT4-HC, CS-P80A150V4BT5, CS-P80A150V4BT6	
<b>Brand Name</b>	: SPA BULLET	
<b>Model Difference</b>	: All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name for commercial.	
<b>Product Description</b>	Operation Frequency: Bluetooth 4.0: 2402MHz~2480MHz	
	Number of Channel:	Bluetooth: 79 Channels <small>See Note 3</small>
	Max Peak Output Power:	Bluetooth: 9.668 dBm(8-DPSK)
	Antenna Gain:	0 dBi PCB Antenna
	Modulation Type:	GFSK 1Mbps(1 Mbps) π/4-DQPSK(2 Mbps) 8-DPSK(3 Mbps)
<b>Power Supply</b>	: DC power by DC Battery.	
<b>Power Rating</b>	: DC 12V DC Battery.	
<b>Connecting I/O Port(S)</b>	: Please refer to the User's Manual	

**Note:**More detail information about Equipment, please refer to User's manual, more information about the RF, please refer to test report.

TB-RF-075-1.0

## MPE Calculations for WIFI

### 1. Antenna Gain:

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)
1	N/A	N/A	PCB Ant.	0

### 2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

### 3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = (P G) / 4\pi R^2$$

Where

**S**: power density

**P**: power input to the antenna

**G**: power gain of the antenna in the direction of interest relative to an isotropic radiator.

**R**: distance to the center of radiation of the antenna

### 4. Test Result:

Worst Maximum MPE Result						
Mode	N <sub>TX</sub>	Power(max) (dBm) [P]	ANT Gain (dBi) [G]	Turn-up Power Tolerance (dB)	Distance (cm) [R]	Power Density (mW/ cm <sup>2</sup> ) [S]
GFSK	1	9.266	0	±1	20	0.002115
$\pi/4$ -DQPSK	1	9.469	0	±1	20	0.002216
8-DPSK	1	9.668	0	±1	20	0.002320

**Note:**

(1) N<sub>TX</sub>= Number of Transmit Antennas

(2) RF Output power specifies that Maximum Conducted Peak Output Power.

**5. Conclusion:**

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

**Limits for General Population/ Uncontrolled Exposure**

Frequency Range (MHz)	Power density (mW/ cm <sup>2</sup> )
300-1,500	F/1500
1,500-100,000	1.0

For : Bluetooth 4.0: 2402MHz~2480MHz

MPE limit S: 1 mW/ cm<sup>2</sup>

The MPE is calculated as 0.002320 mW / cm<sup>2</sup> < limit 1 mW / cm<sup>2</sup>.

So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b).

The RF Exposure Information page from the manual is included here for reference.

**Note**

For a more detailed features description, please refer to the RF Test Report.