

Maximum Permissible Exposure Evaluation

FCC ID: 2AGGTV4B1512

1. Client Information

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

2. General Description of EUT

EUT Name	:	Bluetooth Subwoofer(Speaker Box)	
Models No.	:	CS-P80A150V4BT4, CS-P80A150V4BT4-HB, CS-P80A150V4BT4-HC, CS-P80A150V4BT5, CS-P80A150V4BT6	
Brand Name	:	SPA BULLET	
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is model name for commercial.	
Product Description	:	Operation Frequency: Bluetooth 4.0: 2402MHz~2480MHz	
	:	Number of Channel:	Bluetooth:79 Channels See Note 3
	:	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)
Power Supply	:	DC power by DC Battery.	
Power Rating	:	DC 12V DC Battery.	
Connecting I/O Port(S)	:	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

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

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 _{TX}	Power(max) (dBm) [P]	ANT Gain (dBi) [G]	Turn-up Power Tolerance (dB)	Distance (cm) [R]	Power Density (mW/ cm ²) [S]
GFSK	1	9.266	0	±1	20	0.002115
π/4-DQPSK	1	9.469	0	±1	20	0.002216
8-DPSK	1	9.668	0	±1	20	0.002320

Note:

(1) N_{TX}= 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 ²)
300-1,500	F/1500
1,500-100,000	1.0

For : Bluetooth 4.0: 2402MHz~2480MHz

MPE limit S: 1 mW/ cm²

The MPE is calculated as $0.002320 \text{ mW / cm}^2 < \text{limit } 1 \text{ mW / cm}^2$.

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.