Maximum Permissible Exposure Evaluation

FCC ID: 2AGGTV4BBT14

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

EUT Name	:	Bluetooth Subwoofer(Speaker Box)	
Models No.	:	CS-P80A150V4BBT,CS-P80A150V4BBT-HB,CS-P80A150V4BBT-HC, CS-P80A150V4BBTX2, CS-P80A150V4BBTX3	
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 2.1+EDR: 2402MHz~2480MHz	
		Number of Channel:	Bluetooth:79 Channels **See Note 3**
		Max Peak Output Power:	Bluetooth: 4.413 dBm(GFSK)
		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.			

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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**	**4.413**	**0**	**±1**	**20**	**0.00069190**
π/4-DQPSK	**1**	**3.744**	**0**	**±1**	**20**	**0.00059312**
8-DPSK	**1**	**3.952**	**0**	**±1**	**20**	**0.00062222**

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 2.1+EDR: 2402MHz~2480MHz
MPE limit S: 1 mW/cm^2
The MPE is calculated as 0.00069190mW/cm^2 < limit 1 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.