

Maximum Permissible Exposure Report

FCC ID: 2A7A4PDWR5969

1. Product Information

Product name	SPEAKER BOX			
Model number	PDWR59BTB			
Additional Model No.	PDWR59BTW, PDWR69BTB, PDWR69BTW, NWS05-5BT, NWS05-6BT, NWS10-4BT, NWS13			
Model Declaration	PCB board, structure and internal of these model(s) are the same, So no additional models were tested			
Power supply	Input: AC 110-240V, 50-60Hz, 1000mA, 150W Max			
Modulation Type	GFSK, π/4-DQPSK, 8-DPSK for Bluetooth V5.0(DSS)			
Antenna Type	PCB Antenna			
Antenna Gain	-0.68dBi(Max.)			
Hardware version				
Software version				
FCC Operation frequency	2402MHz-2480MHz			
Exposure category	General population/uncontrolled environment			
EUT Type	Production Unit			
Device Type	Mobile Devices			

2. Evaluation Method

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modelled or measured field strengths or power density, is ≤ 1.0. The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

3. Limit

3. 1 Refer Evaluation Method

ANSI C95.1–2019: IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz

<u>FCC KDB publication 447498 D01 General 1 RF Exposure Guidance v06:</u> Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.

FCC CFR 47 part2 2.1091: Radiofrequency radiation exposure evaluation: mobile devices.



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3. 2 Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

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Frequency	Electric Field	,		Averaging Time
Range(MHz)	Strength(V/m)			(minute)
	Limits for Oc	cupational/Controll	led Exposure	
0.3 - 3.0	614 1.63 (100) *		6	
3.0 - 30	1842/f	4.89/f	(900/f ²)*	6
30 – 300 61.4		0.163	` 1.0 ′	6
300 – 1500	300 – 1500 /		f/300	6
1500 - 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

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	Frequency	Electric Field	Magnetic Field	Power Density	Averaging Time
	Range(MHz)	Strength(V/m)	rength(V/m) Strength(A/m)		(minute)
Limits for Occupational			upational/Uncontro	lled Exposure	立清福
	0.3 – 3.0 614		1.63	(100) *	30
	3.0 – 30 824/f		2.19/f	(180/f ²)*	30
	30 – 300 27.5		0.073	0.2	30
	300 – 1500 /		/	f/1500	30
	1500 – 100,000	/	/	1.0	30

F=frequency in MHz

4. MPE Calculation Method

Predication of MPE limit at a given distance Equation from page 18 of OET Bulletin 65, Edition 97-01

S=PG/4πR²

Where: S=power density

P=power input to 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

5. Antenna Information

EUT can only use antennas certificated as follows provided by manufacturer;

Internal/External Identification	Antenna type and antenna number	Operate frequency band	Maximum antenna gain	Notes
Antenna	PCB Antenna	2400MHz~2500MHz	-0.68dBi	BT Antenna



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^{*=}Plane-wave equivalent power density



6. Conducted Power

< BT Max Conducted Power >

Mode	Channel	Frequency(MHz)	Max Conducted Power (dBm)
	0	2402	0.46
GFSK	39	2441	0.66
	78	2480	0.78
π/4-DQPSK	0	2402	0.23
	39	2441	0.29
	78	2480	0.55
-n.143	0	2402	0.26
8-DPSK	39	2441	0.38
	78	2480	0.57

7. Manufacturing Tolerance

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GFSK (Peak)								
Channel	Channel 0	Channel 39	Channel 78					
Target (dBm)	0	0	0					
Tolerance ±(dB)	1.0	1.0	1.0					
	π/4-DQPS	SK (Peak)						
Channel	Channel 0	Channel 39	Channel 78					
Target (dBm)	THE O Lab	O Till Till Man	Lab 0					
Tolerance ±(dB)	1.0	1.0 05 183	1.0					
	8-DPSK (Peak)							
Channel	Channel Channel 0		Channel 78					
Target (dBm)	0	0	0					
Tolerance ±(dB)	1.0	1.0	1.0					

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8. Measurement Results

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, r =20cm, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

[Antenna]

[BT

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm2)	MPE
	dBm mW	Limits				
		(mW/cm2)				
GFSK	1.0	1.2589	-0.68	0.8551	0.0002	1.0000
π/4-DQPSK	1.0	1.2589	-0.68	0.8551	0.0002	1.0000
8-DPSK	1.0	1.2589	-0.68	0.8551	0.0002	1.0000

Remark:

- 1. Output power including tune-up tolerance;
- 2. MPE evaluate distance is 20cm from user manual provide by manufacturer.

9. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

-----THE END OF REPORT-----



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