



MPE Test Report

Report No.: MTi211026001-01E3

Date of issue: Nov. 26, 2021

Applicant: Chug, Inc.

Product name: DESKTOP GAMING SOUNDBAR

Model(s): GSSPE01

FCC ID: 2A023-GSSPE01

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

Instructions

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TEST RESULT CERTIFICATION	
Applicant's name.....	Chug, Inc.
Address.....	7157 Shady Oak Road, Eden Prairie, MN 55344, USA
Manufacturer's Name	ZHONGSHAN YONGWEI ELECTRICAL APPLIANCE CO., LTD
Address.....	Building F, No 21 Defu Street Tiancheng Road, Dongsheng Town, Zhongshan City, Guangdong Province, P.R.C
Product description	
Product name.....	DESKTOP GAMING SOUNDBAR
Trademark	Atrix, Gamestop
Model Name	GSSPE01
Serial Model.....	N/A
Standards.....	N/A
Test procedure	KDB 447498 D01 v06
Date of Test	
Date (s) of performance of tests... :	2021-11-03 ~2021-11-26
Test Result.....:	Pass
This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.	

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1 RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

1.1 Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled 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
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

R = distance between observation point and center of the radiator in cm(20cm)

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.



1.2 Measurement Result

BT&BLE:

Operation Frequency: BT GFSK, $\pi/4$ -DQPSK, 8DPSK: 2402-2480MHz, BLE GFSK: 2402-2480MHz

Power density limited: 1mW/ cm²

Antenna Type: BT&BLE Antenna: PCB Antenna; BT antenna gain: 1.9dBi
R=20cm, mW=10^(dBm/10), antenna gain Numeric=10^(dBi/10)= 10^(1.9/10)=1.55

BT:

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
				tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	-0.417	(-1)±1	0	1.000	1.9	1.55	0.0003	1
2441		-1.803	(-1)±1	0	1.000	1.9	1.55	0.0003	1
2480		-3.75	(-3)±1	-2	0.631	1.9	1.55	0.0002	1
2402	$\pi/4$ -DQPSK	1.984	2±1	3	1.995	1.9	1.55	0.0006	1
2441		0.574	0±1	1	1.259	1.9	1.55	0.0004	1
2480		-1.371	(-1)±1	0	1.000	1.9	1.55	0.0003	1
2402	8DPSK	2.554	2±1	3	1.995	1.9	1.55	0.0006	1
2441		1.152	1±1	2	1.585	1.9	1.55	0.0005	1
2480		-0.776	(-1)±1	0	1.000	1.9	1.55	0.0003	1

BLE:

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
				tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	-0.325	(-1)±1	0	1.000	1.9	1.55	0.0003	1
2440		-1.703	(-1)±1	0	1.000	1.9	1.55	0.0003	1
2480		-3.583	(-3)±1	-2	0.631	1.9	1.55	0.0002	1

Conclusion:

For the max result: 0.0006 ≤ 1.0 for 1g SAR, No SAR is required.

----END OF REPORT----