

TEST REPORT

Report Number.....:	90014-24-72-24-PP004	
Date of issue	2023-12-26	
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Standard(s).....:	FCC 1.1310: §1.1307(b)	
Test item description.....:	LED Wireless Bluetooth speaker	
Trade Mark.....:	N/A	
Model/Type reference	G58, G63	
FCC ID.....:	2BDWD-G58	
Date of receipt of test item	2023-12-09	
Date (s) of performance of test:	2023-12-10 to 2023-12-19	
Summary of Test Results.....:	Pass	
The Summary of Test Results based on a technical opinion belongs to the standard(s).		
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Modified History

Report No.	Revision Date	Summary
90014-24-72-24-PP004	2023-12-22	Original Report

1. EUT Specification

Characteristics	Description
Product:	LED Wireless Bluetooth speaker
Model Number:	G58, G63 (All tests were performed on model G58)
Sample:	1#
Device Type:	Bluetooth V5.3
Data Rate:	1Mbps for BT V5.3 GFSK modulation 2Mbps for BT V5.3 pi/4-DQPSK modulation 3Mbps for BT V5.3 8DPSK modulation
Modulation:	GFSK modulation for BT V5.3 (1Mbps) pi/4-DQPSK modulation for BT V5.3 (2Mbps) 8DPSK modulation for BT V5.3 (3Mbps)
Operating Frequency Range(s) :	2402-2480MHz
Number of Channels:	79 channels
Transmit Power Max:	0.43 dBm
Antenna Gain:	-0.58 dBi
Power supply:	Input: 9V  2A Battery Capacity: 3.7V 1200mAh
Evaluation applied:	☒ MPE Evaluation ☐ SAR Evaluation

2. Test Requirement:

RF EXPOSURE EVALUATION

According to 447498 D01 V06: 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)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm ²)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

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 = 3.1416

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

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.

3. Measurement Result

WPT:

Antenna gain: 0 dBi

For Electric Field Emissions the max Measure Value 2.78 (V/m) Limit 614(V/m)

For Magnetic Field Emissions the max Measure Value 0.0866(A/m) Limit 1.63(A/m)

BT

Antenna gain: -0.58 dBi

modulation	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain Numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
GFSK	2402	-1.82	±1	-0.82	0.87	0.000144	1
	2441	-1.02	±1	-0.02	0.87	0.000174	1
	2480	-1.19	±1	-0.19	0.87	0.000167	1
pi/4-DQPSK	2402	-1.00	±1	0.00	0.87	0.000174	1
	2441	-0.20	±1	0.80	0.87	0.000209	1
	2480	-0.40	±1	0.60	0.87	0.000200	1
8DPSK	2402	-0.37	±1	0.63	0.87	0.000202	1
	2441	0.43	±1	1.43	0.87	0.000242	1
	2480	0.20	±1	1.20	0.87	0.000230	1

CONCLUSION of simultaneous transmitter

Both of the module 1 and module 2 can transmit simultaneously, the formula of calculated the MPE is:

$CPD1/LPD1 + CPD2/LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

Therefore the worst-case situation is $2.78/614 + 0.000242 / 1.00 = 0.000476 < 1$,

$0.0866/1.63 + 0.000242 / 1.00 = 0.053371 < 1$,

This confirmed that the device comply with FCC 1.1310 MPE limit.

Therefore the worst-case situation is 0.053371, which is less than "1",

This confirmed that the device comply with FCC 1.1310 MPE limit.

*** End of Report ***

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