

RF Exposure Evaluation

FCC ID: 2A365-D1

1. Client Information

Applicant	:	Guangzhou Qiangle Electronics Co., Ltd.
Address	:	1512, Zhongjiaohuitong Center (Building C2), No.4 Huitong 2nd Street, Hengli Town, Nansha District, Guangzhou City, Guangdong, China
Manufacturer	:	Guangzhou Qiangle Electronics Co., Ltd.
Address	:	1512, Zhongjiaohuitong Center (Building C2), No.4 Huitong 2nd Street, Hengli Town, Nansha District, Guangzhou City, Guangdong, China

2. General Description of EUT

EUT Name	:	Bluetooth Speaker
Model(s) No.	:	D1, D2, D3, D5, D6, D7, D8, D9, D10, U1, U2, U3, U5, U6, U7
Model Different	:	All PCB boards and circuit diagrams are the same, the only difference is that names and appearance.
Product Description	Operation Frequency:	Bluetooth V5.2: 2402MHz~2480MHz
	Number of Channel:	Bluetooth 5.2(BDR+EDR): 79 channels
	RF Output Power:	-1.56dBm (Max)
	Antenna Gain:	0 dBi PIFA Antenna
	Modulation Type:	GFSK, π /4-DQPSK, 8-DPSK
	Bit Rate of Transmitter:	1/2/3Mbps
Power Supply	:	Input: DC 5V/2A DC 3.7V by 1500mAh Li-ion battery
Software Version	:	Major force 2833
Hardware Version	:	Major force 2833
Sample ID	:	20211125-05_01-02
Remark: The antenna gain provided by the applicant, the adapter and verified for the RF conduction test and adapter provided by TOBY test lab.		

Note: More test information about the EUT please refer the RF Test Report.

TB-RF-074-1.0

SAR Test Exclusion Calculations

1. FCC: According to KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

(1) Clause 4.3: General SAR test reduction and exclusion guidance

Sub clause 4.31: Standalone SAR test exclusion considerations

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6GHz at test separation distance ≤ 5 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] * [\sqrt{f_{\text{GHz}}}] \leq 3.0 \text{ for 1-g SAR}$$

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] * [\sqrt{f_{\text{GHz}}}] \leq 7.5.0 \text{ for 10-g SAR}$$

2. Calculation:

Test separation: 5mm						
Bluetooth Mode (GFSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-2.41	-2 ± 1	-1.0	0.794	0.246	3.0
2.441	-1.99	-2 ± 1	-1.0	0.794	0.248	3.0
2.480	-1.76	-1 ± 1	0	1.000	0.315	3.0
Bluetooth Mode ($\pi/4$ -DQPSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-2.39	-2 ± 1	-1.0	0.794	0.246	3.0
2.441	-2.01	-2 ± 1	-1.0	0.794	0.248	3.0
2.480	-1.82	-1 ± 1	0	1.000	0.315	3.0
Bluetooth Mode (8-DPSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dBm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-2.11	-2 ± 1	-1.0	0.794	0.246	3.0
2.441	-1.71	-1 ± 1	0	1.000	0.315	3.0
2.480	-1.56	-1 ± 1	0	1.000	0.315	3.0

Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06.

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