

RF Exposure Evaluation

FCC ID: 2A5NN-LLR064

1. Client Information

Applicant	:	Shenzhen Youwen E-Commerce co.,Ltd
Address	:	401, 11th Building, Shaxia Industrial Park, Minzhi Community, Minzhi Street, Longhua District, Shezhen, Guadongdong, China
Manufacturer	:	Shenzhen Fullwill Technology Co.,Ltd
Address	:	4th Floor, Fanshen Industrial Building, 3rd Lane, Liuxian 1st Road, Xin'an Street, Bao'an DistriCity, Guangdong, China

2. General Description of EUT

EUT Name	:	USB-Powered Speaker, vertical computer speaker, plug-in bluetooth speaker	
Model(s) No.	:	LLR064, XKX064, VZ064, YF064	
Model Difference	:	All PCB boards and circuit diagrams are the same, the only difference is the name.	
Product Description	:	Operation Frequency:	Bluetooth V5.0: 2402MHz~2480MHz
		Number of Channel:	Bluetooth V5.0(BDR+EDR): 79 channels
		RF Output Power:	-0.51dBm (Max)
		Antenna Gain:	1.2dBi PCB Antenna
		Modulation Type:	GFSK, π /4-DQPSK, 8-DPSK
		Bit Rate of Transmitter:	1/2/3Mbps
Power Supply	:	Input: DC 5V	
Software Version	:	V13	
Hardware Version	:	V1.10	
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.

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	-2.01	-2 ± 1	-1.0	0.794	0.246	3.0
2.441	-3.37	-3 ± 1	-2.0	0.631	0.197	3.0
2.480	-4.68	-4 ± 1	-3.0	0.501	0.158	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	0.2	0 ± 1	1.0	1.259	0.390	3.0
2.441	-1.16	-1 ± 1	0	1.000	0.312	3.0
2.480	-2.49	-2 ± 1	-1.0	0.794	0.250	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	0.78	0 ± 1	1.0	1.259	0.390	3.0
2.441	-0.56	0 ± 1	1.0	1.259	0.393	3.0
2.480	-1.87	-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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