

RF Exposure Evaluation

FCC ID: 2AAZR-HSD8031A

1. Client Information

Applicant : Shenzhen Highstar Electrical Co., Ltd
Address : 2F&4F, Building 6, Highstar Industrial zone, Gangtou, Bantian Street, Longgang District, Shenzhen, China
Manufacturer : Shenzhen Highstar Electrical Co., Ltd
Address : 2F&4F, Building 6, Highstar Industrial zone, Gangtou, Bantian Street, Longgang District, Shenzhen, China

2. General Description of EUT

EUT Name	:	BLUETOOTH SPEAKER LANTERN WITH POWER BANK&COLOR LIGHT	
Models No.	:	HSD8031A, HSD8031B, HSD8031C	
Model Difference	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is model name for commercial.	
Product Description	:	Operation Frequency:	Bluetooth V2.1+EDR: 2402~2480 MHz
		RF Output Power:	Bluetooth: -0.555dBm(π /4-DQPSK)
		Antenna Gain:	0dBi PCB Antenna
Power Supply	:	DC Voltage supplied by USB cable DC Voltage supplied by Li-ion battery	
Power Rating	:	DC 5.0 V from the USB cable DC 3.7V by 2*2200mAh Li-ion battery	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

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:

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

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

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	-1.761	-2.5 ± 1	-1.5	0.708	0.219	3.0
2.441	-2.042	-2.5 ± 1	-1.5	0.708	0.221	3.0
2.480	-3.016	-2.5 ± 1	-1.5	0.708	0.223	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	-0.555	-1 ± 1	0	1.000	0.310	3.0
2.441	-0.804	-1 ± 1	0	1.000	0.312	3.0
2.480	-1.782	-1 ± 1	0	1.000	0.315	3.0

So standalone SAR measurements are not required.

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