

RF Exposure Evaluation

FCC ID: 2AS3N-HPS

1. Client Information

Applicant	:	SHENZHEN HOTOP ELECTRONIC TECHNOLOGY CO.,LTD
Address	:	No.6, Lane 2, ShaTai Road, The Second Industrial Park, NanShan, HuMen District, District, Dong Guan, China
Manufacturer	:	SHENZHEN HOTOP ELECTRONIC TECHNOLOGY CO.,LTD
Address	:	No.6, Lane 2, ShaTai Road, The Second Industrial Park, NanShan, HuMen District, District, Dong Guan, China

2. General Description of EUT

EUT Name	:	Outdoor waterproof bluetooth speaker	
Models No.	:	HPS-026 (Please see the Annex)	
Model Difference	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is model name and Appearance of the color.	
Product Description	:	Operation Frequency:	Bluetooth V4.2: 2402~2480 MHz
		RF Output Power:	Bluetooth: 2.739 dBm(Max) BLE: 0.194 dBm(Max)
		Antenna Gain:	-0.58dBi PCB Antenna
Power Supply	:	DC Voltage Supply from Adapter DC Voltage supplied by Li-ion battery.	
Power Rating	:	Input: DC 5.0V by adapter DC 3.7V by 1800mAh Li-ion battery	
Software Version	:	AC-JL6928 5.1	
Hardware Version	:	V1.0	
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:

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

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

2. Calculation:

Test separation: 5mm						
Remark: Bluetooth and BLE does not support simultaneous transmission.						
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	2.117	2 ± 1	3	1.995	0.618	3.0
2.441	0.892	1 ± 1	2	1.585	0.495	3.0
2.480	-0.851	0 ± 1	1	1.259	0.397	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	2.739	2 ± 1	3	1.995	0.618	3.0
2.441	1.510	1 ± 1	2	1.585	0.495	3.0
2.480	-0.233	0 ± 1	1	1.259	0.397	3.0

BLE 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	0.194	0 ± 1	1	1.259	0.390	3.0
2.442	-1.075	-1 ± 1	0	1.000	0.313	3.0
2.480	-2.775	-2 ± 1	-1	0.794	0.250	3.0

Test separation: 5mm	
The worst RF Exposure Evaluation	
Worst Calculation Value	Threshold Value
0.618	3.0

The worst RF Exposure Evaluation is **0.618 / cm² < limit 3.0**, So standalone SAR measurements are not required.

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