

# RF Exposure Evaluation

## FCC ID: 2AXQW-ROBIN

### 1. Client Information

<b>Applicant</b>	:	Studio Designs Limited
<b>Address</b>	:	B11, 3rd Fl, Wong King Ind Building, 2-4 Tai Yau Street, San Po Kong, Hong Kong
<b>Manufacturer</b>	:	Shen zhen Hi-FiD Electronics Tech Co., Ltd
<b>Address</b>	:	4F~ 5F B7 & 3F B17, Hengfeng Industrial Town, Zhoushi Road, Bao'an District, Shenzhen City, China. 518126.

### 2. General Description of EUT

<b>EUT Name</b>	:	Robin
<b>Model(s) No.</b>	:	RS4S5W, RB4S5W
<b>Model Different</b>	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is appearance.
<b>Product Description</b>	Operation Frequency:	Bluetooth V4.2(BT): 2402~2480 MHz
	Number of Channel:	Bluetooth: 79 Channels
	Max Peak Output Power:	Bluetooth: 6.513dBm(8-DPSK)
	Antenna Gain:	0.5dBi PCB Antenna
	Modulation Type:	GFSK: 5.586dBm π/4-DQPSK: 6.447dBm 8-DPSK: 6.513dBm
<b>Power Supply</b>	:	DC 12V from Adapter: Input: AC 100-240V, 50/60Hz Output: DC 12V 1.5A DC 3.7V by 220mAh Li-ion battery
<b>Software Version</b>	:	N/A
<b>Hardware Version</b>	:	N/A

**Remark:** The antenna gain and adapter provided by the applicant, the adapter and verified for the RF conduction test 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  $\leq 5$  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	1.364	1±1	2.0	1.585	0.491	3.0
2.441	3.835	3±1	4.0	2.512	0.785	3.0
2.480	5.586	5±1	6.0	3.981	1.254	3.0
Bluetooth Mode (π/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	2.825	2±1	3.0	1.995	0.618	3.0
2.441	4.979	4±1	5.0	3.162	0.988	3.0
2.480	6.447	6±1	7.0	5.012	1.579	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	2.958	2±1	2.0	1.585	0.491	3.0
2.441	5.132	5±1	5.0	3.162	0.988	3.0
2.480	6.513	6±1	7.0	5.012	1.579	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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