

# RF Exposure Evaluation

## FCC ID: 2AGUT-NRF52810

### 1. Client Information

<b>Applicant</b>	:	SHENZHEN RADIOLAND TECHNOLOGY CO.,LTD
<b>Address</b>	:	5F, Block A2, ChenTian Hangcheng Industry Zone, XiXiang Town, Bao'an district, Shenzhen, China
<b>Manufacturer</b>	:	SHENZHEN RADIOLAND TECHNOLOGY CO.,LTD
<b>Address</b>	:	5F, Block A2, ChenTian Hangcheng Industry Zone, XiXiang Town, Bao'an district, Shenzhen, China

### 2. General Description of EUT

<b>EUT Name</b>	:	NRF52180 BLE Tag	
<b>Models No.</b>	:	NRF52810B3, B1, B2, B3, X1, X2, X4, C1, C2, A1, S1	
<b>Model Different</b>	:	All these models are the same PCB, layout and electrical circuit, the only difference is Size and battery	
<b>Product Description</b>	:	Operation Frequency:	Bluetooth V4.2: 2402MHz~2480MHz
	:	RF Output Power:	BLE:4.169dBm (Max)
	:	Antenna Gain:	2.5dBi PCB Antenna
<b>Power Rating</b>	:	DC 3V 220mAh by button cell	
<b>Software Version</b>	:	V1.1	
<b>Hardware Version</b>	:	V1.1	
<b>Connecting I/O Port(S)</b>	:	Please refer to the User's Manual	
<b>Remark</b>	:	The antenna gain provided by the applicant, the 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:

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

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

## 2. Calculation:

Test separation: 5mm						
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	4.169	$4 \pm 1$	5	3.162	0.980	3.0
2.442	3.929	$4 \pm 1$	5	3.162	0.988	3.0
2.480	4.031	$4 \pm 1$	5	3.162	0.996	3.0

So standalone SAR measurements are not required.

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