



# CTC Laboratories, Inc. (FCC Designation Number: CN1208)

2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Tel: +86-755-27521059 Fax: +86-755-27521011 <http://www.sz-ctc.org.cn>

## Maximum Permissible Exposure Evaluation

FCC ID: 2APN5BASICR4

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b).

### EUT Specification

Applicant	Shenzhen Sonoff Technologies Co.,Ltd.
Address	3F & 6F, Bldg A, No. 663, Bulong Rd, Shenzhen, Guangdong, China
Product Name:	Wi-Fi Smart Switch
Trade Mark:	Sonoff
Model/Type Reference:	BASICR4
Listed Model(s):	BASICR4M
Model Differences:	All these models are identical in the same PCB, layout, electrical circuit and enclosure. The difference is the model name, and the model BASICR4M supports the Matter function.
Frequency Band (Operating)	BLE: 2402~2480MHz WiFi: 2412-2462MHz
Device Category	<input type="checkbox"/> Portable (<5mm separation) <input type="checkbox"/> Mobile (>20cm separation) <input checked="" type="checkbox"/> Fixed (>20cm separation) <input type="checkbox"/> Others ____
Exposure Classification	<input type="checkbox"/> Occupational/Controlled exposure (S=5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )
Antenna Diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Antenna Gain (Max)	-0.8dBi
Evaluation Applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

CTC Laboratories, Inc.

1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

Fax: (86)755-27521011

[Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)



For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)

**Limits for Maximum Permissible Exposure (MPE)**

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
(A) Limits for Occupational/Controlled Exposure				
300-1500	--	--	F/300	<6
1500-100000	--	--	5	<6
(B) Limits for General Population/Uncontrolled Exposure				
300-1500	--	--	F/1500	<30
1500-100000	--	--	1	<30

**Calculation Method**

Friis transmission formula:  $Pd = (P_{out} * G) / (4 * \pi * R^2)$

Where:

Pd= Power density in mW/cm<sup>2</sup>

P<sub>out</sub>= output power to antenna in mW

G= gain of antenna in linear scale

Pi= 3.1416

R= distance between observation point and center of the radiator in cm

Pd limit of MPE is 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

**Measurement Result**

Mode	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Tune Up Tolerance (dB)	Max. Tune Up Power (dBm)	Power Density at 20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
BLE	2440	-0.8	3.19	±1	4.00	0.0004	1
802.11g	2462	-0.8	21.58	±1	22.50	0.0294	1

The BLE and WiFi can transmit simultaneously.

Mode	Frequency (MHz)	Antenna Gain (dBi)	Power Density at 20cm (mW/cm <sup>2</sup> )	Total Power density at 20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
BLE	2440	-0.8	0.0004	0.0298	1
802.11g	2462	-0.8	0.0294		

0

Note:

1. Calculate in the worst-case mode.
2. Max. Tune Up Power is declared by manufacturer, and used to calculate.
3. For a more detailed features description, please refer to the RF Test Report.

\*\*\*\*\*THE END\*\*\*\*\*

CTC Laboratories, Inc.

1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Tel.: (86)755-27521059

Fax: (86)755-27521011

Http://www.sz-ctc.org.cn



For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : [yz.cnca.cn](http://yz.cnca.cn)