EN 62311:2008

ASSESSMENT REPORT

For

Shenzhen Sonoff Technologies Co.,Ltd.

1001, BLDG8, Lianhua Industrial Park, shenzhen, GD, China

Tested Model: ZBBridge, SNZB-01, SNZB-02, SNZB-03, SNZB-04

Report Type:	**Product Type:**
Original Report	ZigBee Bridge (Model Name:ZBBridge), Wireless Switch (Model Name: SNZB-01), Temperature and Humidity Sensor (Model Name: SNZB-02), Motion Sensor Model Name: SNZB-03), Wireless Door/Window Sensor (Model Name: SNZB-04)

Report Number: RDG200402011

Report Date: 2020-05-04

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	ZigBee Bridge (Model Name:ZBBridge), Wireless Switch(Model Name:SNZB-01), Temperature and Humidity Sensor(Model Name: SNZB-02), Motion Sensor(Model Name: SNZB-03), Wireless Door/Window Sensor(Model Name: SNZB-04)
EUT Model:	ZBBridge, SNZB-01, SNZB-02, SNZB-03, SNZB-04
Rated Input Voltage:	ZBBridge: DC 5V from USB port SNZB-01: CR2450 3V; SNZB-02: CR2450 3V SNZB-03: CR2450 3V; SNZB-04: CR2032 3V
Serial Number:	ZBBridge: RDG200402011-RF-S1 SNZB-01: RDG200402011-RF-S2 SNZB-02: RDG200402011-RF-S3 SNZB-03: RDG200402011-RF-S4 SNZB-04: RDG200402011-RF-S5
EUT Received Date:	2020.4.5
EUT Received Status:	Good

Note: Model ZBBridge with two shapes, the others are the same.

Objective

This report is prepared on behalf of ***Shenzhen Sonoff Technologies Co.,Ltd.*** in accordance with EN 62311:2008, Generic standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (0 Hz–300 GHz) is to demonstrate the compliance of apparatus with the basic restrictions or reference levels on exposure of the general public related to electric, magnetic, electromagnetic fields as well as induced and contact current.

The objective is to determine the compliance of EUT with EN 62311:2008.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with EN 62311:2008.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "△". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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Technical Requirements Specification in EN 62311

General Description of Applied Standards

EN 62311 Generic standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (0 Hz–300 GHz) is to demonstrate the compliance of apparatus with the basic restrictions or reference levels on exposure of the general public related to electric, magnetic, electromagnetic fields as well as induced and contact current.

RF Exposure Evaluation

Limit:

According to EN 62311, the criteria listed in the below table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified table 2 of Council Recommendation 1999/519/EC.

Reference levels for electric, magnetic and electromagnetic fields
(0 Hz to 300 GHz, unperturbed rms values)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field(μT)	Equivalent plane wave power density S_{eq}(W/m^2)
0-1 Hz	-	$3{,}2 \times 10^4$	4×10^4	-
1-8 Hz	10 000	$3{,}2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-
8-25 Hz	10 000	4 000/f	5 000/f	-
0,025-0,8 kHz	250/f	4/f	5/f	-
0,8-3 kHz	250/f	5	6,25	-
3-150 kHz	87	5	6,25	-
0,15-1 MHz	87	0,73/f	0,92/f	-
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	-
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1{,}375\ f^{1/2}$	$0{,}0037\ f^{1/2}$	$0{,}0046\ f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

Notes:

1. f as indicated in the frequency range column.

Test method

Far Field Calculation Formula

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$

Where:

P = Input Power of the antenna （W）
G = antenna gain relative to an isotropic antenna（numeric）
θ,ϕ = elevation and azimuth angles to point of investigation
r = distance from observation point to the antenna（m）
ηo = characteristic impedance of free space

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \le 1$$

Test Data

Model	Mode	Frequency	Tune-up power	Power Density Seq	S_{limit}	S_i/S_{limit}
	(MHz)	(MHz)	(dBm)	(W/m^2)	(W/m^2)	
ZBBridge	Wi-Fi	2412-2472	16	0.079	10	0.0079
	ZigBee	2405-2480	10	0.020	10	0.002
SNZB-01	ZigBee	2405-2480	6	0.008	10	0.0008
SNZB-02	ZigBee	2405-2480	6	0.008	10	0.0008
SNZB-03	ZigBee	2405-2480	4	0.005	10	0.0005
SNZB-04	ZigBee	2405-2480	5	0.006	10	0.0006

For Model ZBBridge:

Wi-Fi can an transmit simultaneously with ZigBee, and:

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

$=S_{ZigBee/}S_{limit\_ZigBee}+S_{Wi\text{-}Fi}/S_{limit\_Wi\text{-}Fi}$
$=0.0079+0.002$
$=0.0099<1.0$

Note:

The distance from observation point to the antenna is 20 cm.

Conclusion: Compliance

EXHIBIT A - EUT PHOTOGRAPHS

For photos in this section, please refer to report No.: RDG200402011-02 EXHIBIT A.

*******END OF REPORT*******