



RF Exposure Evaluation Report

SONOFF Zigbee 3.0 USB Dongle Plus **Product**

SONOFF Trade mark

Model/Type reference ZBDongle-P

Serial Number N/A

Report Number EED32N80817502

FCC ID 2APN5ZBD-P

Date of Issue Nov. 26, 2021

47 CFR Part 1.1307

47 CFR Part 1.1093 **Test Standards**

KDB447498D01 General RF Exposure

Guidance v06

PASS Test result

Prepared for:

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Prepared by:

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Nov. 26, 2021

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Check No.:3006010921







Version

Version No.	Date	Description		
00	Nov. 26, 2021	Original		











































































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3 General Information

3.1 Client Information

Applicant:	Shenzhen Sonoff Technologies Co.,Ltd.		
Address of Applicant:	1001,BLDG8, Lianhua Industrial Park, Shenzhen, GD, China		
Manufacturer: Shenzhen Sonoff Technologies Co.,Ltd.			
Address of Manufacturer: 1001,BLDG8, Lianhua Industrial Park, Shenzhen, GD, China			
Factory:	Dongguan xinyi Electronics Co., LTD.		
Address of Factory:	No.4, Zhangyang Fuzhu First Street, Zhangmutou Town, Dongguan , Guangdong		

3.2 General Description of EUT

Product Name:	SONOFF Zigbee 3.0 USB Dongle Plus		
Model No.(EUT):	ZBDongle-P		
Trade Mark:	SONOFF		
EUT Supports Radios application:	2405MHz~2480MHz		

3.3 Product Specification subjective to this standard

Frequency Range:	2405MHz~2480MHz		
Modulation Type:	O-QPSK		
Test Power Grade:	Default		
Test Software of EUT:	SmartRF Studio 7		
Antenna Type:	RP-SMA antenna		
Antenna Gain:	2dBi		
Power Supply:	DC 5V		
	8.96dBm		
Max Conducted Peak Output Power:	The Max Conducted Peak Output Power data refer to the report EED32N80817501		
Sample Received Date:	Sep. 01, 2021		
Sample tested Date:	Sep. 01, 2021 to Nov. 12, 2021		

Remark:

Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

Model No.: ZBDongle-P

Part Name	Model Name	Supplier(Brand)	Remark
USB to serial port chip	CP2102N-A02- GQFN28R	Siliconlabs	Different number of pins, 28 pins
USB to serial port chip CP2102N-A02- GQFN24R		Siliconlabs	Different number of pins, 24 pins

Only main test ZBDongle-P (CP2102N-A02-GQFN28R)

USB to serial port chip have two specifications, Different number of pins(the change has no influence on RF performance), Their electrical circuit design, layout and internal wiring are identical.



3.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

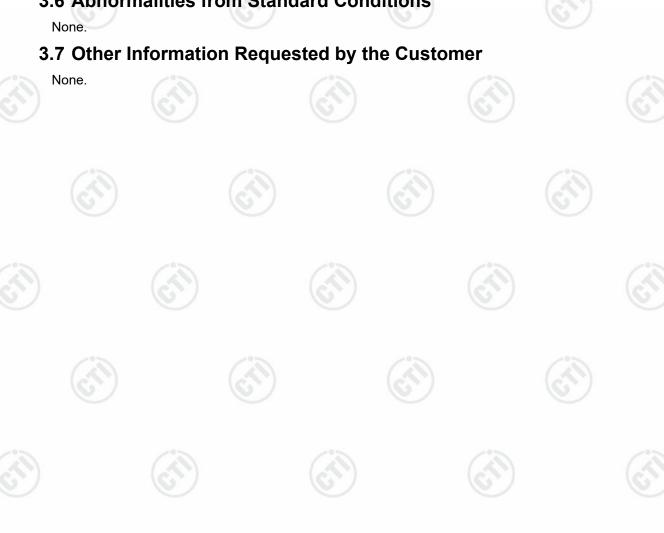
Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted. FCC Designation No.: CN1164

3.5 Deviation from Standards

None.

3.6 Abnormalities from Standard Conditions



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4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06 Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

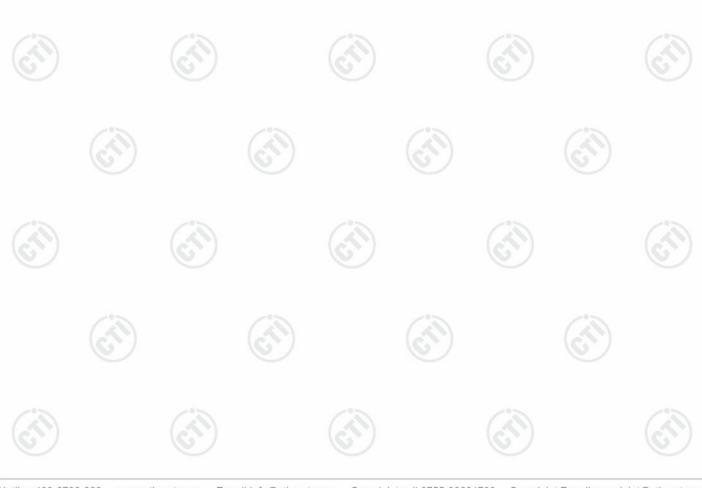
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] \cdot [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

f(GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is \leq 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is \leq 5 mm, a distance of 5 mm is applied to determine SAR test exclusion





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4.1.2 EUT RF Exposure

The tune-up power is 8.50 dBm +/- 0.5dB, therefore the highest tune-up power is 9.0 dBm (7.94 mW)@2480Mhz

When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

So,

$$(7.94 \text{ mW} / 5\text{mm}) * (2.480\text{GHz} ^0.5) = 2.5$$

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] * [$\sqrt{f(GHz)}$] = 2.5< 3.0

Therefore, standalone SAR measurements are not required for both head and body.







PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32N80817501 for EUT external and internal photos.

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