



RF EXPOSURE Test Report

Report No.: MTi211008024-06E3

Date of issue: Dec. 02, 2021

Applicant: Woan Technology (Shenzhen) Co., Ltd.

Product name: SwitchBot Plug Mini

Model(s): W1901400, W1901401, W1901402,
W1901403, W1901404, W1901405

FCC ID: 2AKXB-W1901400

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>



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TEST RESULT CERTIFICATION	
Applicant's name	Woan Technology (Shenzhen) Co., Ltd.
Address	Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Manufacturer's Name	Woan Technology (Shenzhen) Co., Ltd.
Address	Room 1101, Qiancheng Commercial Center, No. 5 Haicheng Road, Mabu Community, Xixiang Sub-district, Bao'an District, Shenzhen, Guangdong, P.R.China, 518100
Factory's Name	Dongguan MingOne Electronics Co., Ltd
Address	2nd floor, 8 building, kegu industrial area, No. 6 zhongnan south road, chang'an town, dongguan
Product description	
Product name	SwitchBot Plug Mini
Trademark	SwitchBot
Model Name	W1901400
Serial Model	W1901401, W1901402, W1901403, W1901404, W1901405
Standards	N/A
Test procedure	KDB 447498 D01 v06
Date of Test	
Date (s) of performance of tests	Nov. 16, 2021 ~ Nov. 29, 2021
Test Result	Pass
This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.	

Testing Engineer

:

Danny Xu

(Danny Xu)

Technical Manager

:

Leon Chen

(Leon Chen)

Authorized Signatory

:

Tom Xue

(Tom Xue)



RF EXPOSURE EVALUATION

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)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

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

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

R = distance between observation point and center of the radiator in cm(20cm)

P_d the limit of MPE, 1mW/cm². 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

BLE:

Operation Frequency: BLE GFSK: 2402-2480MHz,

Power density limited: 1mW/ cm²

2.4GWiFi:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,

802.11n HT40: 2422-2452MHz,

Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna;

WIFI&BLE antenna gain: -0.63dBi

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)}=10^{(-0.63/10)}=0.86$

BLE:

1M:

Channe l Freq. (MHz)	modulation	conducted power	Tune- up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm 2)
				(dBm)	(mW)	(dBi)	Num eric		
2402	GFSK	4.107	4±1	5	3.162	-0.63	0.86	0.0005	1
2440		4.145	4±1	5	3.162	-0.63	0.86	0.0005	1
2480		3.721	4±1	5	3.162	-0.63	0.86	0.0005	1

2M:

Channe l Freq. (MHz)	modulation	conducted power	Tune- up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm 2)
				(dBm)	(mW)	(dBi)	Num eric		
2402	GFSK	4.457	4±1	5	3.162	-0.63	0.86	0.0005	1
2440		4.354	4±1	5	3.162	-0.63	0.86	0.0005	1
2480		3.980	4±1	5	3.162	-0.63	0.86	0.0005	1

2.4GWiFi :

Address: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China.



Channel Freq. (MHz)	modulation	conducted power	Tune-up power	Max		Antenna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm2)	(mW/cm2)
		Ant A	Ant A	(dBm)	(mW)	Numeric		
2412	802.11b	17.23	17±1	18	63.095734	0.86	0.01080	1
2437		17.33	17±1	18	63.095734	0.86	0.01080	1
2462		16.56	17±1	18	63.095734	0.86	0.01080	1
2412	802.11g	16.88	16±1	17	50.118723	0.86	0.00857	1
2437		16.16	16±1	17	50.118723	0.86	0.00857	1
2462		16.00	16±1	17	50.118723	0.86	0.00857	1
2412	802.11n H20	15.42	16±1	17	50.118723	0.86	0.00857	1
2437		16.52	16±1	17	50.118723	0.86	0.00857	1
2462		15.80	16±1	17	50.118723	0.86	0.00857	1
2422	802.11n H40	15.69	16±1	17	50.118723	0.86	0.00857	1
2437		15.54	16±1	17	50.118723	0.86	0.00857	1
2452		15.55	16±1	17	50.118723	0.86	0.00857	1

Conclusion:

2.4GWIFI+BLE=0.01080+0.0005=0.0113

For the max result: $0.0113 \leq 3.0$ for 1g SAR, No SAR is required.

----END OF REPORT----