

MPE REPORT

FCC ID: 2ATYT-SHDW01

Date of issue: Aug. 06, 2019

Report Number:	MTi19042502-1E2
Sample Description:	Smart Door Window Sensor
Model(s):	SH-DW01
Applicant:	Nanjing Easthouse Electrical Co., Ltd.
Address:	No. 27 Puzhou Road, Jiangbei New Area, Nanjing 210032, P.R.China
Date of Test:	July 09, 2019 to July 25, 2019

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

TEST RESULT CERTIFICATION	
Applicant's name:	Nanjing Easthouse Electrical Co., Ltd.
Address:	No. 27 Puzhou Road, Jiangbei New Area, Nanjing 210032, P.R.China
Manufacture's Name:	Nanjing Easthouse Electrical Co., Ltd.
Address:	No. 27 Puzhou Road, Jiangbei New Area, Nanjing 210032, P.R.China
Product name:	Smart Door Window Sensor
Trademark:	EASTHOUSE
Model and/or type reference .:	SH-DW01
Serial Model.....:	N/A
RF Exposure Procedures.....:	KDB 447498 D01 v06

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.

Tested by:

Ada Xiang

Ada Xiang

July 25, 2019

Reviewed by:

Blue Zheng

Blue Zheng

Aug. 06, 2019

Approved by:

Smith Chen

Smith Chen

Aug. 06, 2019

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: 2402-2480MHz

Power density limited: 1mW/ cm²

Antenna Type: BLE Antenna: PCB Antenna;
antenna gain: 2dBi

R=20cm

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

antenna gain Numeric= $10^{(dBi/10)}=10^{(2/10)}=1.58$

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/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
				Ant A	Ant A	Ant A		
2402	GFSK	-3.04	-2±1	-1	0.794	1.58	0.0003	1
2440		-2.37	-2±1	-1	0.794	1.58	0.0003	1
2480		-1.89	-2±1	-1	0.794	1.58	0.0003	1

Conclusion:

For the max result: 0.0003≤ 1.0 for 1g SAR, No SAR is required.

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