



RF EXPOSURE Test Report

Report No.: MTi221130014-01E3

Date of issue: 2023-03-09

Applicant: JIANGSU SHUSHI TECHNOLOGY CO.LTD

Product: Smart Night Light-W

Model(s): 3RSNL02041WM

FCC ID: 2BAGQ-3RSNL02041WM

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>



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Test Result Certification	
Applicant:	JIANGSU SHUSHI TECHNOLOGY CO.LTD
Address:	NO.9 NANXU ROAD RUNZHOU DISTRICT ZHENJIANG, JIANGSU, China
Manufacturer:	Shushi (Zhenjiang) Intelligent Technology Co., Ltd.
Address:	NO.9 NANXU ROAD RUNZHOU DISTRICT ZHENJIANG JIANGSU CHINA
Product description	
Product name:	Smart Night Light-W
Trademark:	N/A
Model name:	3RSNL02041WM
Serial Model:	N/A
Standards:	N/A
Test procedure:	KDB 447498 D01 v06
Date of Test	
Date of test:	2022-12-24 ~ 2023-01-13
Test result:	Pass

Test Engineer :

Yanice Xie

(Yanice Xie)

Reviewed By :

Leon Chen

(Leon Chen)

Approved By :

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: 2402-2480MHz,

Power density limited: 1mW/ cm²

2.4GWiFi:

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

Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna;

WIFI antenna gain: 2.36dBi

R=20cm

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

antenna gain Numeric= $10^{(dBi/10)}=10^{(2.36/10)}=1.72$

BLE:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	(dBi)	Numeric		
2402	BLE-1M	13.05	13±1	14	25.119	2.36	1.72	0.0086	1
2440		13.52	13±1	14	25.119	2.36	1.72	0.0086	1
2480		13.62	13±1	14	25.119	2.36	1.72	0.0086	1



2.4GWiFi:

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		
2412	802.11b	18.15	18±1	19	79.433	1.72	0.02721	1
2437		17.93	18±1	19	79.433	1.72	0.02721	1
2462		17.93	18±1	19	79.433	1.72	0.02721	1
2412	802.11g	22.81	22±1	23	199.526	1.72	0.06835	1
2437		22.79	22±1	23	199.526	1.72	0.06835	1
2462		22.63	22±1	23	199.526	1.72	0.06835	1
2412	802.11n H20	22.65	22±1	23	199.526	1.72	0.06835	1
2437		22.66	22±1	23	199.526	1.72	0.06835	1
2462		22.46	22±1	23	199.526	1.72	0.06835	1

Conclusion:

The device can transmitter simultaneously.

Simultaneous transmission condition

WWAN Band	The MPE ratio
Wi-Fi 2.4G	0.06835
BLE	0.0086

Note:The MPE ratio=Mac Test Result/Limit Value

So the simultaneous transmitting antenna pairs as below:

$\sum$ of MPE ratio=Wi-Fi 2.4G+BLE=0.06835+0.0086=0.07695<1

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