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RF EXPOSURE Test Report

Report No.: MTi210928006-05E3

Date of issue: Dec. 08, 2021

Applicant: WIRELESS-TAG TECHNOLOGY CO., LIMITED.

Product name: WIFI Module

Model(s): WT32C3-01N

FCC ID: 2AFOS-WT32C3-01N

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>



Instructions

1. The report shall not be partially reproduced without the written consent of the laboratory;
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5. Any objection to this report shall be submitted to the laboratory within 15 days from the date of receipt of the report.



TEST RESULT CERTIFICATION	
Applicant's name	WIRELESS-TAG TECHNOLOGY CO., LIMITED.
Address	801, Block A, Building 6, Shenzhen International Innovation Valley, Dashi Road, Xili Community, Xili Street, Nanshan District, Shenzhen
Manufacturer's Name	WIRELESS-TAG TECHNOLOGY CO., LIMITED.
Address	801, Block A, Building 6, Shenzhen International Innovation Valley, Dashi Road, Xili Community, Xili Street, Nanshan District, Shenzhen
Product description	
Product name	WIFI Module
Trademark	Wireless-tag
Model Name	WT32C3-01N
Serial Model	N/A
Standards	N/A
Test procedure	KDB 447498 D01 v06
Date of Test	
Date (s) of performance of tests	Nov. 12, 2021 ~ Dec. 08, 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: 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 antenna gain: 2dBi

R=20cm

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

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

BLE:

Channel 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)	Numeric		
2402	GFSK-1M	-1.009	(-1)±1	0	1.000	2	1.58	0.0003	1
2440		0.768	1±1	2	1.585	2	1.58	0.0005	1
2480		4.443	4±1	5	3.162	2	1.58	0.0010	1
2402	GFSK-2M	-1.128	(-1)±1	0	1.000	2	1.58	0.0003	1
2440		0.641	1±1	2	1.585	2	1.58	0.0005	1
2480		4.303	4±1	5	3.162	2	1.58	0.0010	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/cm2)	(mW/cm2)
		Ant A	Ant A	(dBm)	(mW)	Numeric		
2412	802.11b	17.09	18±1	19	79.43	1.58	0.02497	1
2437		17.83	18±1	19	79.43	1.58	0.02497	1
2462		17.37	18±1	19	79.43	1.58	0.02497	1
2412	802.11g	17.32	18±1	19	79.43	1.58	0.02497	1
2437		17.87	18±1	19	79.43	1.58	0.02497	1
2462		17.43	18±1	19	79.43	1.58	0.02497	1
2412	802.11n H20	17.70	18±1	19	79.43	1.58	0.02497	1
2437		17.79	18±1	19	79.43	1.58	0.02497	1
2462		18.17	18±1	19	79.43	1.58	0.02497	1
2422	802.11n H40	17.26	18±1	19	79.43	1.58	0.02497	1
2437		17.37	18±1	19	79.43	1.58	0.02497	1
2452		17.65	18±1	19	79.43	1.58	0.02497	1

Simultaneous transmit

$$\text{BLE} + 2.4\text{GWiFi} = 0.0010 + 0.02497 = 0.02597$$
Conclusion:

 For the max result: $0.02597 \leq 3.0$ for 1g SAR, No SAR is required.

----END OF REPORT----