



RF EXPOSURE Test Report

Report No.: MTi211214006-08E3

Date of issue: May 11, 2022

Applicant: WIRELESS-TAG TECHNOLOGY CO., LIMITED

Product name: WIFI Module

Model(s): WT32C3-S1, WT32C3-S2

FCC ID: 2AFOS-WT32C3-SX

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

Instructions

1. The report shall not be partially reproduced without the written consent of the laboratory;
2. The test results of this report are only responsible for the samples submitted;
3. This report is invalid without the seal and signature of the laboratory;
4. This report is invalid if transferred, altered or tampered with in any form without authorization;
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-S1
Serial Model	WT32C3-S2
Standards.....	N/A
Test procedure.....	KDB 447498 D01 v06
Date of Test	
Date (s) of performance of tests	2022-04-07 ~ 2022-05-11
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 :

Yanice Xie

(Yanice Xie)

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	*300/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: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

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= $10^{(dBi/10)}=10^{(3/10)}=2$

BLE: 1M

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
				tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	4.13	4±1	5	3.162	2	1.58	0.0010	1
2440		-1.05	(-1)±1	0	1.000	2	1.58	0.0003	1
2480		-5.97	(-5)±1	-4	0.398	2	1.58	0.0001	1

BLE: 2M

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
				tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	0.11	0±1	1	1.259	2	1.58	0.0004	1
2440		-0.22	0±1	1	1.259	2	1.58	0.0004	1
2480		0.95	0±1	1	1.259	2	1.58	0.0004	1



2.4GWiFi:

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna Gain	Evaluation result at 20cm	Power density Limits (mW/cm ²)
				tune-up power				
		(dBm)	(dBm)	(dBm)	(mW)	Numeric	Power density(mW/cm ²)	
Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	Ant A		
2412	802.11b	18.86	18±1	19	79.432823	1.58	0.02497	1
2437		16.62	16±1	17	50.118723	1.58	0.01575	1
2462		13.87	13±1	14	25.118864	1.58	0.00790	1
2412	802.11g	18.33	18±1	19	79.432823	1.58	0.02497	1
2437		15.78	16±1	17	50.118723	1.58	0.01575	1
2462		13.06	13±1	14	25.118864	1.58	0.00790	1
2412	802.11n H20	17.71	18±1	19	79.432823	1.58	0.02497	1
2437		15.1	16±1	17	50.118723	1.58	0.01575	1
2462		12.01	13±1	14	25.118864	1.58	0.00790	1
2422	802.11n H40	15.64	16±1	17	50.118723	1.58	0.01575	1
2437		14.29	15±1	16	39.810717	1.58	0.01251	1
2452		11.98	11±1	12	15.848932	1.58	0.00498	1

Simultaneous transmit

$BLE+2.4GWiFi=0.0010+0.02497=0.02597$

Conclusion:

For the max result: $0.02597 \leq 1.0$ for 1g SAR, No SAR is required.

----END OF REPORT----