



RF EXPOSURE Test Report

Report No.: MTi231221003-05E4
Date of issue: 2024-04-26
Applicant: Wireless-Tag Technology Co., Ltd
Product: WiFi Module
Model(s): WT32-ETH02
FCC ID: 2AFOS-WT32-ETH02

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.cn>

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Test Result Certification	
Applicant:	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:	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:	WT32-ETH02
Series Model:	N/A
Standards:	N/A
Test procedure:	KDB 447498 D01 v06
Date of Test	
Date of test:	2024-02-21 to 2024-04-24
Test result:	Pass

Test Engineer	:	<i>Yanice Xie</i>
		(Yanice.Xie)
Reviewed By	:	<i>David. Lee</i>
		(David Lee)
Approved By	:	<i>Leon Chen</i>
		(Leon Chen)

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

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

BT&BLE:

Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna;

Antenna gain: 2.86 dBi

R=20cm

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

Antenna gain Numeric= $10^{(dBi/10)}=10^{(2.86/10)}=1.93$

2.4GWiFi:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz, n HT40: 2422-2452MHz

Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna;

Antenna gain: 2.86 dBi

R=20cm

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

2.4G: antenna gain Numeric= $10^{(dBi/10)}=10^{(2.86/10)}=1.93$

BT:

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	4.12	5±1	6	3.981	2.86	1.93	0.0015	1
2441		2.83	3±1	4	2.512	2.86	1.93	0.0010	1
2480		2.79	3±1	4	2.512	2.86	1.93	0.0010	1
2402	π/4-DQPSK	6.14	7±1	8	6.310	2.86	1.93	0.0024	1
2441		4.79	5±1	6	3.981	2.86	1.93	0.0015	1
2480		4.85	5±1	6	3.981	2.86	1.93	0.0015	1
2402	8DPSK	6.58	7±1	8	6.310	2.86	1.93	0.0024	1
2441		5.15	6±1	7	5.012	2.86	1.93	0.0019	1
2480		5.27	6±1	7	5.012	2.86	1.93	0.0019	1



BLE:

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	4.35	5±1	6	3.981	2.86	1.93	0.0015	1
2440		4.71	5±1	6	3.981	2.86	1.93	0.0015	1
2480		4.45	5±1	6	3.981	2.86	1.93	0.0015	1

2.4G WIFI:

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna		Evaluation result at 20cm Power density(mW/cm ²)	Power density Limits (mW/cm ²)
				tune-up power		Gain			
		(dBm)	(dBm)	(dBm)	(mW)	(dBi)	Numeric		
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A		
2412	802.11b	17.60	18±1	19	79.433	2.86	1.93	0.03053	1
2437		18.24	18±1	19	79.433	2.86	1.93	0.03053	1
2462		16.74	17±1	18	63.096	2.86	1.93	0.02425	1
2412	802.11g	17.16	18±1	19	79.433	2.86	1.93	0.03053	1
2437		17.92	18±1	19	79.433	2.86	1.93	0.03053	1
2462		15.80	16±1	17	50.119	2.86	1.93	0.01926	1
2412	802.11n H20	17.26	18±1	19	79.433	2.86	1.93	0.03053	1
2437		17.76	18±1	19	79.433	2.86	1.93	0.03053	1
2462		15.88	16±1	17	50.119	2.86	1.93	0.01926	1
2422	802.11n H40	17.07	18±1	19	79.433	2.86	1.93	0.03053	1
2437		17.19	18±1	19	79.433	2.86	1.93	0.03053	1
2452		16.28	17±1	18	63.096	2.86	1.93	0.02425	1

Conclusion:

For the max result: 0.03053 ≤ 1.0 test exclusion threshold, No SAR is required.

----END OF REPORT----