

RF EXPOSURE Test Report

Report No. : MTi250528001-0108E5
Date of Issue : 2025-07-24
Applicant : WIRELESS-TAG TECHNOLOGY CO., LIMITED
Product : WiFi+BLE Module
Model(s) : WT0132C5-S6U, WT0132C5-S6
FCC ID : 2AFOS-WT0132C5-S6

Shenzhen Microtest Co., Ltd.

TEST REPORT

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Test Result Certification		
Applicant	WIRELESS-TAG TECHNOLOGY CO., LIMITED	
Applicant Address	801, Block A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Road, Xili Community, Xili Street, Nanshan District, Shenzhen	
Manufacturer	WIRELESS-TAG TECHNOLOGY CO., LIMITED	
Manufacturer Address	801, Block A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Road, Xili Community, Xili Street, Nanshan District, Shenzhen	
Product description		
Product name	WiFi+BLE Module	
Trademark	Wireless-tag	
Model name	WT0132C5-S6U	
Series Model(s)	WT0132C5-S6	
Standards	47 CFR Part 2.1091	
Test method	KDB 447498 D01 v06	
Testing Information		
Date of test	2025-06-30 to 2025-07-22	
Test Result	Pass	
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Reviewed by:	David Lee	<i>David. Lee</i>
Approved by:	Lewis Lian	<i>Lewis Lian</i>

1 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.

2 Measurement Result

BLE Operation Frequency: 2402-2480MHz,
 2.4G WiFi Operation Frequency: 2412-2462MHz,
 Zigbee Operation Frequency: 2405-2480MHz,
 Power density limited: 1mW/ cm²
 Antenna 1 Type: PCB Antenna
 Antenna 2 Type: FPC Antenna
 Antenna 1 gain: -1.1dBi
 Antenna 2 gain: -0.25dBi
 R=20cm
 $mW=10^{(dBi/10)}$
 Antenna 1 gain Numeric= $10^{(dBi/10)}=10^{(-1.1/10)}=0.78$
 Antenna 2 gain Numeric= $10^{(dBi/10)}=10^{(-0.25/10)}=0.94$

5G WiFi Operation Frequency:
 Antenna 1 Type: PCB Antenna
 Antenna 2 Type: FPC Antenna
 U-NII-1:
 Antenna 1 gain: 0.03 dBi
 Antenna 2 gain: 2dBi
 U-NII-3:
 Antenna 1 gain: -2.1dBi
 Antenna 2 gain: 1 dBi
 R=20cm
 $mW=10^{(dBi/10)}$
 U-NII-1:
 Antenna 1 gain Numeric= $10^{(dBi/10)}=10^{(0.03/10)}=1.01$
 Antenna 2 gain Numeric= $10^{(dBi/10)}=10^{(2/10)}=1.58$
 U-NII-3:
 Antenna 1 gain Numeric= $10^{(dBi/10)}=10^{(-2.1/10)}=0.62$
 Antenna 2 gain Numeric= $10^{(dBi/10)}=10^{(1/10)}=1.26$

BLE(ANT1):

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	GFSK-1M	3.43	3±1	4	2.512	-1.1	0.78	0.0004	1
2440		4.99	5±1	6	3.981	-1.1	0.78	0.0006	1
2480		6.32	6±1	7	5.012	-1.1	0.78	0.0008	1
2402	GFSK-2M	3.68	4±1	5	3.162	-1.1	0.78	0.0005	1
2440		5.06	5±1	6	3.981	-1.1	0.78	0.0006	1
2480		6.12	6±1	7	5.012	-1.1	0.78	0.0008	1

BLE(ANT2):

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	GFSK-1M	3.43	3±1	4	2.512	-0.25	0.94	0.0005	1
2440		4.99	5±1	6	3.981	-0.25	0.94	0.0007	1
2480		6.32	6±1	7	5.012	-0.25	0.94	0.0009	1
2402	GFSK-2M	3.68	4±1	5	3.162	-0.25	0.94	0.0006	1
2440		5.06	5±1	6	3.981	-0.25	0.94	0.0007	1
2480		6.12	6±1	7	5.012	-0.25	0.94	0.0009	1

2.4G WIFI(ANT1):

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/c m ²)
				(dBm)	(mW)	(dBi)	Numeric		
2412	802.11b	15.07	15±1	16	39.811	-1.1	0.78	0.00615	1
2437		15.35	15±1	16	39.811	-1.1	0.78	0.00615	1
2462		17.77	17±1	18	63.096	-1.1	0.78	0.00974	1
2412	802.11g	16.55	17±1	18	63.096	-1.1	0.78	0.00974	1
2437		17.12	17±1	18	63.096	-1.1	0.78	0.00974	1
2462		19.38	19±1	20	100.000	-1.1	0.78	0.01544	1
2412	802.11n20	16.46	17±1	18	63.096	-1.1	0.78	0.00974	1
2437		16.58	17±1	18	63.096	-1.1	0.78	0.00974	1
2462		19.03	19±1	20	100.000	-1.1	0.78	0.01544	1
2412	802.11 ax20	18.50	18±1	19	79.433	-1.1	0.78	0.01227	1
2437		17.82	18±1	19	79.433	-1.1	0.78	0.01227	1
2462		17.83	18±1	19	79.433	-1.1	0.78	0.01227	1
2422	802.11n40	17.03	17±1	18	63.096	-1.1	0.78	0.00974	1
2437		17.26	17±1	18	63.096	-1.1	0.78	0.00974	1
2452		17.25	17±1	18	63.096	-1.1	0.78	0.00974	1

2.4G WIFI(ANT2):

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/c m ²)
				(dBm)	(mW)	(dBi)	Numeric		
2412	802.11b	15.07	15±1	16	39.811	-0.25	0.94	0.00748	1
2437		15.35	15±1	16	39.811	-0.25	0.94	0.00748	1
2462		17.77	17±1	18	63.096	-0.25	0.94	0.01185	1
2412	802.11g	16.55	17±1	18	63.096	-0.25	0.94	0.01185	1
2437		17.12	17±1	18	63.096	-0.25	0.94	0.01185	1
2462		19.38	19±1	20	100.000	-0.25	0.94	0.01878	1
2412	802.11n20	16.46	17±1	18	63.096	-0.25	0.94	0.01185	1
2437		16.58	17±1	18	63.096	-0.25	0.94	0.01185	1
2462		19.03	19±1	20	100.000	-0.25	0.94	0.01878	1
2412	802.11 ax20	18.50	18±1	19	79.433	-0.25	0.94	0.01492	1
2437		17.82	18±1	19	79.433	-0.25	0.94	0.01492	1
2462		17.83	18±1	19	79.433	-0.25	0.94	0.01492	1
2422	802.11n40	17.03	17±1	18	63.096	-0.25	0.94	0.01185	1
2437		17.26	17±1	18	63.096	-0.25	0.94	0.01185	1
2452		17.25	17±1	18	63.096	-0.25	0.94	0.01185	1

Zigbee(ANT1):

Channel	modulation	conducted	Tune-	Max	Antenna	Evaluation	Power
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Freq. (MHz)		power	up					result	density
		(dBm)	(dBm)	tune-up power		Gain		(mW/cm ²)	Limits
				(dBm)	(mW)	(dBi)	Numeric		
2405	Zigbee	4.60	5±1	6	3.981	-1.1	0.78	0.00061	1
2440		5.82	5±1	6	3.981	-1.1	0.78	0.00061	1
2480		6.86	6±1	7	5.012	-1.1	0.78	0.00077	1

Zigbee (ANT2):

Channel Freq. (MHz)	modulation	conducted power	Tune- up power	Max		Antenna		Evaluation result	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain		(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	(dBi)	Numeric		
2405	Zigbee	4.6	5±1	6	3.981	-0.25	0.94	0.00075	1
2440		5.82	5±1	6	3.981	-0.25	0.94	0.00075	1
2480		6.86	6±1	7	5.012	-0.25	0.94	0.00094	1

5G WiFi(ANT1):

Channel Freq. (MHz)	modulation	conducted power	Tune- up	Max		Antenna	Evaluation result at 20cm	Power density
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
5180	11A	10.66	10±1	11	12.589	1.01	0.00252	1
5200		10.63	10±1	11	12.589	1.01	0.00252	1
5240		10.22	10±1	11	12.589	1.01	0.00252	1
5745		6.17	6±1	7	5.012	0.62	0.00061	1
5785		7.32	8±1	9	7.943	0.62	0.00097	1
5825		8.49	8±1	9	7.943	0.62	0.00097	1
5180	11N20SISO	10.76	10±1	11	12.589	1.01	0.00252	1
5200		10.61	10±1	11	12.589	1.01	0.00252	1
5240		10.25	10±1	11	12.589	1.01	0.00252	1
5745		6.08	6±1	7	5.012	0.62	0.00061	1
5785		7.23	8±1	9	7.943	0.62	0.00097	1
5825		8.36	8±1	9	7.943	0.62	0.00097	1
5190	11N40SISO	10.09	10±1	11	12.589	1.01	0.00252	1
5230		9.97	10±1	11	12.589	1.01	0.00252	1
5755		6.15	6±1	7	5.012	0.62	0.00061	1
5795		6.83	6±1	7	5.012	0.62	0.00061	1
5180	11AX20SISO	10.71	10±1	11	12.589	1.01	0.00252	1
5200		10.46	10±1	11	12.589	1.01	0.00252	1
5240		10.00	10±1	11	12.589	1.01	0.00252	1
5745		6.08	6±1	7	5.012	0.62	0.00061	1
5785		7.10	8±1	9	7.943	0.62	0.00097	1
5825		8.36	8±1	9	7.943	0.62	0.00097	1
5180	11AC20SISO	9.14	9±1	10	10.000	1.01	0.00200	1
5200		9.25	9±1	10	10.000	1.01	0.00200	1
5240		8.95	9±1	10	10.000	1.01	0.00200	1
5745		3.67	4±1	5	3.162	0.62	0.00039	1
5785		4.03	4±1	5	3.162	0.62	0.00039	1
5825		5.59	5±1	6	3.981	0.62	0.00049	1

5G WiFi(ANT2):

Channel Freq. (MHz)	modulation	conducted power	Tune-up	Max		Antenna	Evaluation result at 20cm	Power density
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
5180	11A	10.66	10±1	11	12.589	1.58	0.00397	1
5200		10.63	10±1	11	12.589	1.58	0.00397	1
5240		10.22	10±1	11	12.589	1.58	0.00397	1
5745		6.17	6±1	7	5.012	1.26	0.00126	1
5785		7.32	8±1	9	7.943	1.26	0.00199	1
5825		8.49	8±1	9	7.943	1.26	0.00199	1
5180	11N20SISO	10.76	10±1	11	12.589	1.58	0.00397	1
5200		10.61	10±1	11	12.589	1.58	0.00397	1
5240		10.25	10±1	11	12.589	1.58	0.00397	1
5745		6.08	6±1	7	5.012	1.26	0.00126	1
5785		7.23	8±1	9	7.943	1.26	0.00199	1
5825		8.36	8±1	9	7.943	1.26	0.00199	1
5190	11N40SISO	10.09	10±1	11	12.589	1.58	0.00397	1
5230		9.97	10±1	11	12.589	1.58	0.00397	1
5755		6.15	6±1	7	5.012	1.26	0.00126	1
5795		6.83	6±1	7	5.012	1.26	0.00126	1
5180	11AX20SISO	10.71	10±1	11	12.589	1.58	0.00397	1
5200		10.46	10±1	11	12.589	1.58	0.00397	1
5240		10.00	10±1	11	12.589	1.58	0.00397	1
5745		6.08	6±1	7	5.012	1.26	0.00126	1
5785		7.10	8±1	9	7.943	1.26	0.00199	1
5825		8.36	8±1	9	7.943	1.26	0.00199	1
5180	11AX20SISO	9.14	9±1	10	10.000	1.58	0.00315	1
5200		9.25	9±1	10	10.000	1.58	0.00315	1
5240		8.95	9±1	10	10.000	1.58	0.00315	1
5745		3.67	4±1	5	3.162	1.26	0.00079	1
5785		4.03	4±1	5	3.162	1.26	0.00079	1
5825		5.59	5±1	6	3.981	1.26	0.00100	1

Conclusion:

Zigbee, BT and 2.4GWiFi, 5G WiFi cannot work at the same time, ANT 1 and ANT 2 also cannot work at the same time.

For the max result: $0.01878 \leq 1.0$ test exclusion threshold, No SAR is required.

Statement

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***** END OF REPORT *****