MPE Test Report

Report No.:	MTi211229003-01E3
Date of issue:	Jan. 20, 2022
Applicant:	Zhuhai Dingzhi Electronic Technology Co., Ltd
Product name:	IOT WIFI Module
Model(s):	DZ-i5005
FCC ID:	2ATZK-DZ-I5005

Shenzhen Microtest Co., Ltd.

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TEST RESULT CERTIFICATION	
Applicant's name.....	**Zhuhai Dingzhi Electronic Technology Co., Ltd**
Address.....	No.301, Floor 3, Complex Building, No.7, Chuangye West 1st Road, Hongqi Town, Jinwan District, Zhuhai City, Guangdong, China
Manufacturer's Name	**Zhuhai Dingzhi Electronic Technology Co., Ltd**
Address.....	No.301, Floor 3, Complex Building, No.7, Chuangye West 1st Road, Hongqi Town, Jinwan District, Zhuhai City, Guangdong, China
Product description	
Product name.....	IOT WIFI Module
Trademark	N/A
Model Name	DZ-i5005
Serial Model	N/A
Standards.....	N/A
Test procedure	KDB 447498 D01 v06
Date of Test	
Date (s) of performance of tests… :	2022-01-12 ~ 2022-01-20
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 : Cindy Qin

(Cindy Qin)

Technical Manager : Leon Chen

(Leon Chen)

Authorized Signatory : Tom Xue

(Tom Xue)

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)

1.1 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: $Pd= (Pout*G)\ (4*pi*R^2)$

Where

Pd= Power density in mW/cm2

Pout=output power to antenna in mW

G= Numeric gain of the antenna relative to isotropic antenna

Pi=3.1415926

R= distance between observation point and center of the radiator in cm(20cm)

Pd 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.

1.2 Measurement Result

Operation Frequency: BLE GFSK: 2402-2480MHz

WIFI: 802.11b:2412~2462 MHz

Power density limited: 1mW/ cm^2

Antenna Type: PCB Antenna;
BT antenna gain: 1dBi

R=20cm

mW=10^(dBm/10)

antenna gain Numeric=10^(dBi/10)= 10^(1/10)=1.26

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)
				(dBm)	(mW)	Numeric		
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
2412	802.11b	9.88	9±1	10	10	1.26	0.00251	1
2437		9.53	9±1	10	10	1.26	0.00251	1
2462		8.36	9±1	10	10	1.26	0.00251	1

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/cm2)
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	1.376	1±1	2	1.585	1	1.26	0.0004	1
2440		1.23	1±1	2	1.585	1	1.26	0.0004	1
2480		0.707	1±1	2	1.585	1	1.26	0.0004	1

Simultaneous transmit
BLE+2.4GWiFi=0.0004+0.00251=0.00291

Conclusion:

For the max result: 0.00291≤ 1.0 for 1g SAR, No SAR is required.

----END OF REPORT----