

MPE REPORT

FCC ID: 2AR73-H1

Date of issue: Dec. 22, 2018

Report Number:	MTi181217E101
Sample Description:	Wind IoT
Model(s):	H1
Applicant:	Wind Mobility Technology (Beijing) Co., Ltd.
Address:	11603,13th floor, Building 1, No. 2, Nanzhugan Hutong, Dongcheng District, Beijing
Date of Test:	Dec. 05, 2018 to Dec. 22, 2018

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

TEST RESULT CERTIFICATION	
Applicant's name:	Wind Mobility Technology (Beijing) Co., Ltd.
Address:	11603, 13th floor, Building 1, No. 2, Nanzhugan Hutong, Dongcheng District, Beijing
Manufacturer's Name:	Shenzhen Qudong Intelligent Technology Co., Ltd.
Address:	C426, Kechuang Park, No. 131, Yu'an Second Road, Bao'an District, Shenzhen, China
Product name:	Wind IoT
Trademark:	N/A
Model and/or type reference:	H1
Serial Model:	N/A
RF Exposure Procedures:	KDB 447498 D01 v06

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.

Tested by:



Demi Mu

Dec. 22, 2018

Reviewed by:



Blue Zheng

Dec. 22, 2018

Approved by:



Smith Chen

Dec. 22, 2018

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

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

BT:

Operation Frequency: BLE GFSK: 2402-2480MHz,

Power density limited: 1mW/ cm²

Antenna Type: BT Antenna: PCB Antenna;

BT antenna gain: 1dBi

R=20cm

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

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

BLE

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
		(dBm)		tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	-4.384	-3±1	-2	0.631	1	1.26	0.0002	1
2440		-3.175	-3±1	-2	0.631	1	1.26	0.0002	1
2480		-3.808	-3±1	-2	0.631	1	1.26	0.0002	1

WCDMA BAND II:

Channel Freq. (MHz)	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
	(dBm)		tune-up power		Gain			
			(dBm)	(mW)	(dBi)	Numeric		
1852.4	25.53	25±1	26	398.107	4.5	2.82	0.2232	1
1880	25.57	25±1	26	398.107	4.5	2.82	0.2232	1
1907.6	25.55	25±1	26	398.107	4.5	2.82	0.2232	1

WCDMA BAND IV:

Channel Freq. (MHz)	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
	(dBm)		tune-up power		Gain			
			(dBm)	(mW)	(dBi)	Numeric		
1712.4	24.57	23±1	24	251.189	4.5	2.82	0.1408	1
1732.6	23.65	23±1	24	251.189	4.5	2.82	0.1408	1
1752.6	23.69	23±1	24	251.189	4.5	2.82	0.1408	1

WCDMA BAND V:

Channel Freq. (MHz)	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
	(dBm)		tune-up power		Gain			
			(dBm)	(mW)	(dBi)	Numeric		
826.4	24.86	24±1	25	316.228	4.5	2.82	0.1773	0.55
836.6	24.84	24±1	25	316.228	4.5	2.82	0.1773	0.56
846.6	24.91	24±1	25	316.228	4.5	2.82	0.1773	0.56

LTE:

Band	Channel Freq. (MHz)	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
		(dBm)		tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2	1880.0	22.55	23±1	24	251.189	4.5	2.82	0.1409	1
4	1732.5	22.59	23±1	24	251.189	4.5	2.82	0.1409	1
12	704	22.84	23±1	24	251.189	4.5	2.82	0.1409	0.47

Simultaneous transmit:

BT+ WCDMA BAND II =0.0002+0.2232=0.2234 mW/cm²

BT+ WCDMA BAND IV=0.0002+0.1408=0.141 mW/cm²

BT+ (WCDMA BAND V/ Power density Limits) =0.0002+(0.1773/0.55)=0.0002+0.3223=0.3225 mW/cm²

BT+ LTE Band 2 = 0.0002+0.1409=0.1411 mW/cm²

BT+ (LTE Band 12/ Power density Limits) = 0.0002+(0.1409/0.47)=0.0002+0.2998=0.3mW/cm²

Conclusion:

For the max result: $0.3 \leq 1.0$ for 1g SAR, No SAR is required.

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