

# MPE REPORT

FCC ID: 2APB8-IPA1002

Date of issue: Apr. 24, 2018

Report Number:	MTi180423E077
Sample Description:	WiFi ATA
Model(s):	IPA1002
Applicant:	IpAlarm Ltd.
Address:	402 West Ojai Ave, Suite 202 Ojai CA 93023 USA
Date of Test:	Mar, 21. 2018 – Apr, 24. 2018

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

<b>TEST RESULT CERTIFICATION</b>	
<b>Applicant's name</b> .....	<b>IpAlarm Ltd.</b>
Address .....	402 West Ojai Ave, Suite 202 Ojai CA 93023 USA
<b>Manufacture's Name</b> .....	<b>Shenzhen HouTian Network Communication Technology Co., Ltd</b>
Address .....	Floor 3, Building B, No.29 Longfeng Road, Long Gang District, Shen zhen City, Guangdong Province, China
Product name .....	WiFi ATA
Trademark:	IPALARM
Model and/or type reference .:	IPA1002
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:




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Demi Mu

Apr. 24, 2018

Reviewed by:




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Blue Zheng

Apr. 24, 2018

Approved by:




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Smith Chen

Apr. 24, 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 <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	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/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = Numeric gain of the antenna relative to isotropic antenna

$\pi$  = 3.14115926

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

$P_d$  the limit of MPE, 1mW/cm<sup>2</sup>. 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

### WIFI:

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

802.11n HT40: 2422-2452MHz,

Power density limited: 1mW/ cm<sup>2</sup>

Antenna Type: Wifi Antenna: FPCB antenna;

WIFI antenna gain: 2dBi (ANT A), 2dBi (ANT B),

R=20cm

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

antenna gain Numeric= $10^{(dBi/10)}=10^{(2/10)}=1.58$

Channel Freq. (MHz)	modulation	conducted power		Tune-up power		Max				Antenna		Evaluation result at 20cm			Power density Limits (mW/cm <sup>2</sup> )
		(dBm)		(dBm)		tune-up power				Gain		Power density(mW/cm <sup>2</sup> )			
		Ant A	Ant B	Ant A	Ant B	(dBm)		(mW)		Numeric		Ant A	Ant B	Sum	
						Ant A	Ant B	Ant A	Ant B	Ant A	Ant B				
2412	802.11b	15.38	11.28	14±1	14±1	15	13	31.623	19.953	1.58	1.58	0.00994	0.00627	/	1
2437		14.98	11.27	14±1	12±1	15	13	31.623	19.953	1.58	1.58	0.00994	0.00627	/	1
2462		15.37	11.21	14±1	14±1	15	13	31.623	19.953	1.58	1.58	0.00994	0.00627	/	1
2412	802.11g	16.73	14.14	16±1	14±1	17	15	50.119	31.623	1.58	1.58	0.01575	0.00994	/	1
2437		16.96	13.74	16±1	14±1	17	15	50.119	31.623	1.58	1.58	0.01575	0.00994	/	1
2462		16.56	13.82	16±1	14±1	17	15	50.119	31.623	1.58	1.58	0.01575	0.00994	/	1
2412	802.11n H20	16.43	14.16	16±1	14±1	17	15	50.119	31.623	1.58	1.58	0.01575	0.00994	0.02569	1
2437		16.41	14.03	16±1	14±1	17	15	50.119	31.623	1.58	1.58	0.01575	0.00994	0.02569	1
2462		16.43	14.74	16±1	14±1	17	15	50.119	31.623	1.58	1.58	0.01575	0.00994	0.02569	1
2422	802.11n H40	13.52	10.62	13±1	10±1	14	11	25.119	12.589	1.58	1.58	0.00790	0.00396	0.01185	1
2437		13.71	10.77	13±1	10±1	14	11	25.119	12.589	1.58	1.58	0.00790	0.00396	0.01185	1
2452		13.19	9.79	13±1	10±1	14	11	25.119	12.589	1.58	1.58	0.00790	0.00396	0.01185	1

The sum=Power density Ant A/1+Power density Ant b/1

### Conclusion:

For the max result : 0.02569 ≤ 1.0 for 1g SAR, No SAR is required.

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