

# RF Exposure Evaluation Declaration

Product Name : Mi Wi-Fi  
Model No. : R1D  
FCC ID : 2AAF5-MWF01HD

Applicant : Beijing Xiaomi Technology Co., Ltd  
Address : The Rainbow City of China Resources, NO 68, Qinghe  
Middle Street, Haidian District

Date of Receipt : Jul. 03, 2014  
Issued Date : Aug. 01, 2014  
Report No. : 1470115R-RF-US-P20V01  
Report Version : V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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# Test Report Certification

Issued Date : Aug. 01, 2014

Report No. : 1470115R-RF-US-P20V01



Product Name : Mi Wi-Fi

Applicant : Beijing Xiaomi Technology Co., Ltd

Address : The Rainbow City of China Resources, NO 68, Qinghe  
Middle Street, Haidian District

Manufacturer : Xiaomi Electronics Co., Ltd

Address : Room408-11, Building8, Disheng Beijie No.1, Beijing  
Economic-Technological Development Area, Beijing,  
China

Model No. : R1D

FCC ID : 2AAF5-MWF01HD

EUT Voltage : DC: 12V 2.5A

Brand Name : MI

Applicable Standard : KDB 447498D01V05V02  
FCC Part1.1310(b)

Test Result : Complied

Performed Location : Suzhou EMC Laboratory  
No.99 Hongye Rd., Suzhou Industrial Park Loufeng  
Hi-Tech Development Zone., Suzhou, China  
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098  
FCC Registration Number: 800392

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Approved By : Jeff Chen

## Laboratory Information

We, **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

<b>Taiwan R.O.C.</b>	<b>:</b>	<b>BSMI, NCC, TAF</b>
<b>Germany</b>	<b>:</b>	<b>TUV Rheinland</b>
<b>Norway</b>	<b>:</b>	<b>Nemko, DNV</b>
<b>USA</b>	<b>:</b>	<b>FCC</b>
<b>Japan</b>	<b>:</b>	<b>VCCI</b>
<b>China</b>	<b>:</b>	<b>CNAS</b>

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site :<http://www.quietek.com/tw/ctg/cts/accreditations.htm>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site :  
<http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

### **HsinChu Testing Laboratory :**

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### **Linkou Testing Laboratory :**

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### **Suzhou Testing Laboratory :**

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**History of This Test Report**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1470115R-RF-US-P20V01	V1.0	Initial Issued Report	Aug. 01, 2014

## 1. RF Exposure Evaluation

### 1.1. Limits

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> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

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

G = gain of antenna in linear scale

$\pi$  = 3.1416

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

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

## 1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

## 1.3. Test Result of RF Exposure Evaluation

Product	:	Mi Wi-Fi
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

### ● Antenna Gain:

No.	Peak Gain	Directional Gain
ANT1	2.75 dBi for 2.412-2.462GHz 3.50 dBi for 5.150-5.250GHz 2.46 dBi for 5.250-5.350GHz 2.30 dBi for 5.470-5.725GHz 3.14 dBi for 5.745-5.825GHz	
ANT2	2.99 dBi for 2.412-2.462GHz 2.71 dBi for 5.150-5.250GHz 2.82 dBi for 5.250-5.350GHz 3.25 dBi for 5.470-5.725GHz 3.89 dBi for 5.745-5.825GHz	
ANT1+ ANT2		5.88 dBi for 2.412-2.462GHz 6.12 dBi for 5.150-5.250GHz 5.65 dBi for 5.250-5.350GHz 5.80 dBi for 5.470-5.725GHz 6.53 dBi for 5.745-5.825GHz

Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$  dBi

● Output Power into Antenna & RF Exposure Evaluation Distance:

Antenna 1:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
802.11b/g/n(20MHz)	2412~2462MHz	859.0135	0.321907
802.11n(40MHz)	2422~2452MHz	864.9679	0.324138
802.11a/n/ac(20MHz)	5180~5240MHz	36.8978	0.016434
802.11a/n/ac(20MHz)	5745~5825MHz	812.8305	0.333220
802.11n/ac(40MHz)	5190~5230MHz	48.0839	0.021416
802.11n/ac(40MHz)	5755~5795MHz	765.5966	0.313856
802.11ac(80MHz)	5210MHz	44.3609	0.019757
802.11ac(80MHz)	5775MHz	727.7798	0.298353

Antenna 2:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
802.11b/g/n(20MHz)	2412~2462MHz	948.4185	0.375604
802.11n(40MHz)	2422~2452MHz	864.9679	0.342555
802.11a/n/ac(20MHz)	5180~5240MHz	37.8443	0.014052
802.11a/n/ac(20MHz)	5745~5825MHz	662.2165	0.322649
802.11n/ac(40MHz)	5190~5230MHz	46.8813	0.017407
802.11n/ac(40MHz)	5755~5795MHz	651.6284	0.317490
802.11ac(80MHz)	5210MHz	47.0977	0.017488
802.11ac(80MHz)	5775MHz	619.4411	0.301808

Antenna 1+2:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
802.11b/g/n(20MHz)	2412~2462MHz	889.2011	0.685063
802.11n(40MHz)	2422~2452MHz	916.2205	0.705879
802.11a/n/ac(20MHz)	5180~5240MHz	27.2898	0.022219
802.11a/n/ac(20MHz)	5745~5825MHz	881.0489	0.788371
802.11n/ac(40MHz)	5190~5230MHz	46.9894	0.038259
802.11n/ac(40MHz)	5755~5795MHz	851.1380	0.761606
802.11ac(80MHz)	5210MHz	47.2063	0.038435
802.11ac(80MHz)	5775MHz	841.3951	0.752888

Note:

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.

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