

Shanghai Feixun Communication Co., Ltd.

Wireless router

Main Model: FIR303B

Serial Model: N/A

June 16, 2014

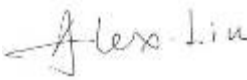
Report No.: 14050025-FCC-H1

(This report supersedes NONE)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

		
William Long Compliance Engineer	Alex Liu Technical Manager	

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RF Exposure Evaluation Report

To: FCC 2.1091: 2013

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Laboratory Introduction

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Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC , RF/Wireless , Telecom
Canada	EMC, RF/Wireless , Telecom
Taiwan	EMC, RF, Telecom , Safety
Hong Kong	RF/Wireless ,Telecom
Australia	EMC, RF, Telecom , Safety
Korea	EMI, EMS, RF , Telecom, Safety
Japan	EMI, RF/Wireless, Telecom
Singapore	EMC , RF , Telecom
Europe	EMC, RF, Telecom , Safety

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1. EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programme was to demonstrate compliance of the Shanghai Feixun Communication Co., Ltd., Wireless router and model: FIR303B against the current Stipulated Standards. The Wireless router has demonstrated compliance with the FCC 2.1091: 2013.

EUT Information

EUT Description	:	Wireless router
Main Model	:	FIR303B
Serial Model	:	N/A
Antenna Gain	:	WIFI Antenna 1: 5 dBi(Transmitter) WIFI Antenna 2: 5 dBi(Transmitter) WIFI Antenna 3: 5 dBi(Receiver)
Input Power	:	Adapter 1: Model: PSAA06X-120 (X=A, C, E, K, S) Input: AC 100-240V 200mA Output: DC 12V 500mA Adapter 2: Model: RD1200500-C55-8MG Input: AC 100-240V 250mA Output: DC 12V 500mA
Maximum Conducted Peak Power to Antenna	:	802.11b:18.53dBm 802.11g:22.85dBm 802.11n(20M):22.93 dBm 802.11n(40M):23.16 dBm 802.11n(20M MIMO):25.93 dBm 802.11n(40M MIMO):26.16 dBm
Classification Per Stipulated Test Standard	:	FCC 2.1091: 2013

2. TECHNICAL DETAILS

Purpose	Compliance testing of Wireless router with stipulated standard
Applicant / Client	Shanghai Feixun Communication Co., Ltd. No.3666,Sixian Rd.,Songjiang District,Shanghai,P.R.China
Manufacturer	Shanghai Feixun Communication Co., Ltd. No.3666,Sixian Rd.,Songjiang District,Shanghai,P.R.China
Laboratory performing the tests	SIEMIC (Nanjing-China) Laboratories NO.2-1,Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China Tel: +86(25)86730128/86730129 Fax: +86(25)86730127 Email: China@siemic.com.cn
Test report reference number	14050025-FCC-H1
Date EUT received	May 16, 2014
Standard applied	FCC 2.1091: 2013
Dates of test	May 20 to June 16, 2014
No of Units	#1
Equipment Category	Spread Spectrum System/Device
Trade Name	PHICOMM
RF Operating Frequency (ies)	WIFI: 802.11b/g/n(20M): 2412-2462 MHz 802.11n(40M): 2422-2452 MHz
Number of Channels	802.11b/g /n(20M): 11CH 802.11n(40M): 7CH
Modulation	802.11b/g/n: CCK/OFDM
Port	Power Port, LAN*4 Port, WAN Port
FCC ID	YJYFIR303B

3. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FCC §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
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
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Test Data

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Note:

Please refer to the following tables and plots.

Antenna Gain 1=5 dbi

Antenna Gain 2=5 dbi

Array Gain=8 dbi =10*log((10^{5/10})+(10^{5/10})))

Note: base on different type antenna and their gain, the bellow result is the worst case.

802.11b:

Maximum peak output power at antenna input terminal: 18.53(dBm)
Maximum peak output power at antenna input terminal: 71.29(mW)

Prediction distance: >20 (cm)
Predication frequency: 2412 (MHz)
Antenna Gain (typical): 5 (dBi)
Antenna Gain (typical): 3.16 (numeric)

The worst case is power density at predication frequency at 20 cm: 0.045 (mW/cm2)
MPE limit for general population exposure at prediction frequency: 1.0 (mW/cm2)

$0.045(\text{mW}/\text{cm}^2) < 1.0(\text{mW}/\text{cm}^2)$

802.11g:

Maximum peak output power at antenna input terminal: 22.85 (dBm)
Maximum peak output power at antenna input terminal:192.75 (mW)

Prediction distance: >20 (cm)
Predication frequency: 2412 (MHz)
Antenna Gain (typical):5 (dBi)
Antenna Gain (typical): 3.16 (numeric)

The worst case is power density at predication frequency at 20 cm: 0.121 (mW/cm2)
MPE limit for general population exposure at prediction frequency:1.0 (mW/cm2)

$0.121(\text{mW}/\text{cm}^2) < 1.0(\text{mW}/\text{cm}^2)$

802.11n(20M):

Maximum peak output power at antenna input terminal: 22.93 (dBm)
Maximum peak output power at antenna input terminal: 196.34 (mW)

Prediction distance: >20 (cm)
Predication frequency: 2412 (MHz)
Antenna Gain (typical):5 (dBi)
Antenna Gain (typical): 3.16(numeric)

The worst case is power density at predication frequency at 20 cm: 0.124(mW/cm2)
MPE limit for general population exposure at prediction frequency:1.0 (mW/cm2)

$0.124 (\text{mW}/\text{cm}^2) < 1.0(\text{mW}/\text{cm}^2)$

802.11n(40M):

Maximum peak output power at antenna input terminal: 23.16(dBm)
Maximum peak output power at antenna input terminal: 207.01 (mW)

Prediction distance: >20 (cm)
Predication frequency: 2412 (MHz)
Antenna Gain (typical):5 (dBi)
Antenna Gain (typical): 3.16 (numeric)

The worst case is power density at predication frequency at 20 cm: 0.130 (mW/cm2)
MPE limit for general population exposure at prediction frequency:1.0 (mW/cm2)

$0.130 (\text{mW}/\text{cm}^2) < 1.0(\text{mW}/\text{cm}^2)$

802.11n(20M MIMO):

Maximum peak output power at antenna input terminal: 25.93(dBm)
Maximum peak output power at antenna input terminal: 391.74 (mW)

Prediction distance: >20 (cm)
Predication frequency: 2412 (MHz)
Antenna Gain (typical):5 (dBi)
Antenna Gain (typical):3.16 (numeric)

The worst case is power density at predication frequency at 20 cm: 0.247 (mW/cm²)
MPE limit for general population exposure at prediction frequency:1.0 (mW/cm²)

0.247 (mW/cm²) < 1.0(mW/cm²)

802.11n(40M MIMO):

Maximum peak output power at antenna input terminal: 26.16(dBm)
Maximum peak output power at antenna input terminal: 413.05 (mW)

Prediction distance: >20 (cm)
Predication frequency: 2412 (MHz)
Antenna Gain (typical):5 (dBi)
Antenna Gain (typical):3.16 (numeric)

The worst case is power density at predication frequency at 20 cm: 0.260 (mW/cm²)
MPE limit for general population exposure at prediction frequency:1.0 (mW/cm²)

0.260 (mW/cm²) < 1.0(mW/cm²)

Result: Pass