

# RF Exposure Evaluation Declaration

Product Name : 802.11a/b/g/n WLAN Module

Model No. : 95.0209T02

FCC ID : TC2N1101

Applicant : RoKu

Address : 12980 Saratoga Avenue, Suite D, Saratoga, CA  
95070 USA

Date of Receipt : 2009/09/17

Issued Date : 2009/10/22

Report No. : 099S059R-RF-US

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.

This report must not be used to claim product endorsement by CNLA, NVLAP, NIST or any agency of the Government.

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## Test Report Certification

Issued Date : 2009/10/22

Report No. : 099S059R-RF-US



Product Name : 802.11a/b/g/n WLAN Module  
 Applicant : Roku  
 Address : 12980 Saratoga Avenue, Suite D, Saratoga, CA 95070  
 USA  
 Manufacturer : Foxconn  
 Address : No 1925 , Nanle road, Songjiang Export Processing  
 Zone , Shanghai , China 201613  
 Model No. : 95.0209T02  
 FCC ID : TC2N1101  
 EUT Voltage : 5Vdc, 2.5A  
 Trade Name : Roku  
 Applicable Standard : FCC OET 65  
 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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 ( Engineering Manager: Dream Cao )

## 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 by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

Taiwan R.O.C.	: BSMI, DGT, CNLA
Germany	: TUV Rheinland
Norway	: Nemko, DNV
USA	: FCC, NVLAP
Japan	: VCCI

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

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:

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

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

Pd = power density in mW/cm<sup>2</sup>

Pout = 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

Pd 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	:	802.11a/b/g/n WLAN Module
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

### Antenna Gain:

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 5.2dBi or 3.31 in linear scale.

### Output Power into Antenna & RF Exposure Evaluation Distance:

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)	2412~2462	84.33	0.055556
802.11n(40MHz)	2422~2452	90.78	0.059804
802.11a/n(20MHz)	5180~5240	46.77	0.030813
802.11a/n(20MHz)	5260~5320	149.97	0.098794
802.11a/n(20MHz)	5500~5700	148.59	0.097888
802.11n(40MHz)	5190~5230	42.17	0.027780
802.11n(40MHz)	5270~5310	123.31	0.081233
802.11n(40MHz)	5510~5670	149.28	0.098340
802.11a/n(20MHz)	5745~5805	167.49	0.110339
802.11n(40MHz)	5755~5795	128.23	0.084475