## RF Exposure Evaluation Declaration

Product Name : 802.11g Wireless ADSL2+ Router

Model No. : P-660W-T1 v2, P-660W-T3 v2, 401793

FCC ID : I88P660WTXV2

Applicant : ZyXEL Communications Corporation

Address : No. 6, Innovation Rd 2, Science-Based Industrial

Park, Hsin-Chu, Taiwan

Date of Receipt : 2008/03/24

Issued Date : 2008/04/09

Report No. : 084S013-RF-US

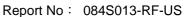
The test results relate only to the samples tested.

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.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.







### **Test Report Certification**

: 2008/04/09 Report No. : 084S013-RF-US

# QuieTek

**Product Name** 802.11g Wireless ADSL2+ Router

**ZyXEL Communications Corporation** Applicant

Address No. 6, Innovation Rd 2, Science-Based Industrial Park,

Hsin-Chu, Taiwan

Manufacturer ZyXEL Communications (Wuxi) Corp. Model No. P-660W-T1 v2, P-660W-T3 v2, 401793

FCC ID 188P660WTXV2 Rated Voltage : AC 120V/60Hz

**EUT Voltage** Power by Adapter

Trade Name ZyXEL

Applicable Standard FCC OET 65 Test Result Complied

Performed Location SuZhou EMC laboratory

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FCC Registration Number: 800392

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Report No: 084S013-RF-US

#### **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

FCC, NVLAP

Germany : TUV Rheinland

Norway : Nemko, DNV

Japan : VCCI

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

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

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

#### **HsinChu Testing Laboratory:**

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.



USA













#### **LinKou Testing Laboratory:**















#### **Suzhou Testing Laboratory:**















#### 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)

	Electric	Magnetic	Power	Average	
Frequency	Field	Field		Time	
Range (MHz)	Strength	Strength	Density		
	(V/m)	(A/m)	(mW/cm2)	(Minutes)	
(A) Limits for (	(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: Pd = (Pout\*G)/(4\*pi\*r2)

Where

Pd = power density in mW/cm2

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 id the limit of MPE, 1 mW/cm2. 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	:	802.11g Wireless ADSL2+ Router	
Test Item	:	RF Exposure Evaluation	
Test Site	:	AC-4	
Test Mode	:	Mode 1: Transmit by 802.11b	

#### **Antenna Gain:**

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.14 dBi or 1.64 in linear scale.

#### **Output Power Into Antenna & RF Exposure Evaluation Distance:**

Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
01	2412.00	82.9851	0.027023
06	2437.00	78.3430	0.025511
11	2462.00	70.3072	0.022894

#### 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/cm2.



Product	:	802.11g Wireless ADSL2+ Router	
Test Item	:	RF Exposure Evaluation	
Test Site	:	AC-4	
Test Mode	:	Mode 2: Transmit by 802.11g	

#### **Antenna Gain:**

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.14 dBi or 1.64 in linear scale.

#### **Output Power Into Antenna & RF Exposure Evaluation Distance:**

Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
01	2412.00	63.5331	0.020689
06	2437.00	60.8135	0.019803
11	2462.00	60.5341	0.019712

#### 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/cm2.