



RF Exposure Evaluation Declaration

Product Name : Dual Band Wireless AC/N VDSL2 VoIP
Combo WAN Gigabit IAD
Model No. : VMG8924-B10A
FCC ID : I88VMG8924B10A

Applicant : ZyXEL Communications Corporation
Address : No. 2, Gongye E. 9th Road Hsinchu Science Park,
Hsinchu, Taiwan

Date of Receipt : 06/09/2013
Issued Date : 12/10/2013
Report No. : 139S026R-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.

This report must not be used to claim product endorsement by TAF, CNAS or any agency of the Government.

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Test Report Certification

Issued Date : 12/10/2013

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Gigabit IAD

Applicant : ZyXEL Communications Corporation

Address : No. 2, Gongye E. 9th Road Hsinchu Science Park,
Hsinchu, Taiwan

Manufacturer : WuXi MitraStar Technology Co. Ltd.

Address : 60#-E, Minshan Road, New district WuXi, Jiangsu,
P.R.China

Model No. : VMG8924-B10A

FCC ID : I88VMG8924B10A

EUT Voltage : DC: 12V

Brand Name : ZyXEL

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; IC Lab Code: 4075B

Documented By : Alice Mi

Reviewed By : Jack Zhang

Approved By : Jame Yuan

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:

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

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:

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Suzhou Testing Laboratory :

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TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098 E-Mail : service@quietek.com

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

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 is 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	:	Dual Band Wireless AC/N VDSL2 VoIP Combo WAN Gigabit IAD
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

Antenna Gain:

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.7dBi for 2.4GHz and 3.0dBi for 5GHz in logarithm 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 ²)
802.11b/g/n(20MHz)	2412~2462MHz	380.1894	0.177309
802.11n(40MHz)	2422~2452MHz	392.6449	0.183118
802.11a/n(20MHz)/ac(20MHz)	5180~5240MHz, 5745~5825MHz	460.2566	0.182697
802.11n(40MHz)/ac(40MHz)	5190~5230MHz, 5755~5795MHz	562.3413	0.223219
802.11ac(80MHz)	5210MHz, 5775MHz	647.1426	0.256880

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.

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