

RF Exposure Evaluation Declaration

Product Name : 802.11n 2x2 Wireless ADSL2+ 4-port Gateway
Model No. : AMG1312-T10D, AMG1312-T30D,
AMG1302-T10D, AMG1302-T30D
FCC ID : I88AMG1312T10D

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

Date of Receipt : Dec. 12, 2014
Issued Date : Jan. 06, 2015
Report No. : 14C0378S-RF-US-P20V01
Report Version : V3.0

This report was based on Quietek report No: 14C0351R



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 or any agency of the government.

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Test Report Certification

Issued Date : Jan. 06, 2015

Report No. : 14C0378S-RF-US-P20V01



Product Name : 802.11n 2x2 Wireless ADSL2+ 4-port Gateway

Applicant : ZyXEL Communications Corporation

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

Manufacturer : ZyXEL Communications Corporation

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

Model No. : AMG1312-T10D, AMG1312-T30D, AMG1302-T10D,
AMG1302-T30D

FCC ID : I88AMG1312T10D

EUT Voltage : AC 100-240V, 50/60Hz

Brand Name : ZyXEL

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

Documented By : Alice Ni

Reviewed By : Dream Cao

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:

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:

HsinChu Testing Laboratory :

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

Linkou Testing Laboratory :

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

Suzhou Testing 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 E-Mail : service@quietek.com

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
14C0378S-RF-US-P20V01	V1.0	Initial Issued Report	Dec. 25, 2014
14C0378S-RF-US-P20V01	V2.0	Modified the model number	Jan. 05, 2015
14C0378S-RF-US-P20V01	V3.0	Modified FCC ID	Jan. 06, 2015

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

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d 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	:	802.11n 2x2 Wireless ADSL2+ 4-port Gateway
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

- Antenna Gain:

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1dBi and 2 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)	2412~2462	320.6269	0.127271
802.11n(40MHz)	2422~2452	295.1209	0.117147

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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