FCC RF Exposure Report

FCC ID	:	**I8803911**
Equipment	:	**802.11ax (WiFi 6) Dual-Radio PoE Access Point**
Model No.	:	**NWA50AX PRO** **(Please refer to section 1.1.1 for more details)**
Brand Name	:	**ZYXEL**
Applicant	:	**Zyxel Communications Corporation**
Address	:	**No.2 Industry East RD. IX, Hsinchu Science Park, Hsinchu 30075, Taiwan, R.O.C**
Standard	:	**47 CFR FCC Part 2.1091**
Received Date	:	**Nov. 16, 2022**
Tested Date	:	**Nov. 22, 2022 ~ Jan. 04, 2023**

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:	**Approved by:**
Along Chen / Assistant Manager	**Gary Chang / Manager**

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Release Record

Report No.	Version	Description	Issued Date
FA2N1601	Rev. 01	Initial issue	Jan. 16, 2023

1 General Description

1.1 Information

1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
ZYXEL	NWA50AX PRO	802.11ax (WiFi 6) Dual-Radio PoE Access Point	Software cloud management functions are different
	NWA90AX PRO		
✦ The above models, model **NWA50AX PRO** was selected as a representative one for the final test and only its data was recorded in this report.			

2 RF Exposure Test Exemptions

2.1 1-mW TEST EXEMPTION

Available maximum time-averaged power is no more than 1 mW.

2.2 SAR-BASED EXEMPTION

This exemption is applicable to the frequency range between 300 MHz and 6 GHz, with test separation distances between 0.5 cm and 40 cm, and for all RF sources in fixed, mobile, and portable device exposure conditions.

The maximum time-averaged power or effective radiated power (ERP), whichever is greater, ≤ Pth

$Pth\ (mW) = ERP_{20cm}(d/20)^x$ d≤20cm
$Pth\ (mW) = ERP_{20cm}$ 20 cm < d ≤40cm

Where $x = -\log_{10}\left(\frac{60}{ERP_{20cm}\sqrt{f}}\right)$

$Pth\ (mW) = ERP_{20cm}(mW) = 2040f$ 0.3GHz ≤ f < 1.5 GHz
$Pth\ (mW) = ERP_{20cm}(mW) = 3060$ 1.5GHz ≤ f < 6 GHz

Frequency (MHz)	Power Thresholds	
	mW	dBm
663	1353	31.31
699	1426	31.54
704	1436	31.57
777	1585	32.00
824	1681	32.26
902	1840	32.65
1500 ~ 6000	3060	34.86

2.3 MPE-BASED EXEMPTION

For a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to λ/2π, where λ is the free-space operating wavelength in meters.

Radio Source Frequency			Minimum Distance			Threshold ERP
F_L MHz		F_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	-	1.34	159 m	-	35.6 m	1920 R^2
1.34	-	30	35.6 m	-	1.6 m	3450 R^2/f^2
30	-	300	1.6 m	-	159 mm	3.83 R^2
300	-	1500	159 mm	-	31.8 mm	0.0128 R^2f
1500	-	100000	31.8 mm	-	0.5 mm	19.2 R^2

Note: R is the antenna-person separation distance.

2.4 REFERENCE GUIDANCE

447498 D04 Interim General RF Exposure Guidance v01

2.5 DEVIATION FROM TEST STANDARD AND MEASUREMENT PROCEDURE

None

2.6 MEASUREMENT UNCERTAINTY

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Parameters	Uncertainty
Conducted power	±0.808 dB

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

2.7 EXEMPTION CALCULATION

Non-beamforming mode

Frequency Range (MHz)	Maximum Conducted Power (dBm)	Maximum Tune Up Limit (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	SAR-Based Exemption Thresholds (mW)	Ratio	Pass/ Fail
2412-2462	23.79	24	2.6	26.6	24.45	278.61	3060	0.091	Pass
5180-5240	29.34	29.5	2.87	32.37	30.22	1051.96	3060	0.343	Pass
5260-5320	23.70	24	4.30	28.3	26.15	412.1	3060	0.135	Pass
5500-5720	23.72	24	3.96	27.96	25.81	381.07	3060	0.124	Pass
5745-5825	29.57	30	2.69	32.69	30.54	1132.4	3060	0.370	Pass

Beamforming mode

Frequency Range (MHz)	Maximum Conducted Power (dBm)	Maximum Tune Up Limit (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	SAR-Based Exemption Thresholds (mW)	Ratio	Pass/ Fail
2412-2462	20.78	21	1.83	22.83	20.68	116.95	3060	0.038	Pass
5180-5240	24.57	24.5	4.63	29.13	26.98	498.88	3060	0.163	Pass
5260-5320	18.93	19	6.06	25.06	22.91	195.43	3060	0.064	Pass
5500-5720	18.95	19	5.72	24.72	22.57	180.72	3060	0.059	Pass
5745-5825	24.80	25	4.45	29.45	27.3	537.03	3060	0.175	Pass

Note:
Minimum separation distance = 20 cm.

2.8 MPE EVALUATION OF SIMULTANEOUS TRANSMISSION

Mode	Max Ratio of Each Mode	
	Non-beamforming mode	***Beamforming mode***
WLAN 2.4GHz	0.091	0.038
WLAN 5GHz	0.370	0.175
Sum	0.461	0.213
Limit	1	1
Pass / Fail	Pass	Pass

Conclusion
Wi-Fi 2.4G & 5G transmitter are qualify for Simultaneous Transmission SAR exemption

3 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 333, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

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