

# RF EXPOSURE REPORT

**REPORT NO.:** SA120719C20C

**MODEL NO.:** NWA1123-NI, NWA5123-NI

**FCC ID:** I88NWA1123-NI

**RECEIVED:** Apr. 09, 2014

**TESTED:** Apr. 09 ~ May 21, 2014

**ISSUED:** May 23, 2014

**APPLICANT:** ZyXEL Communications Corporation

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**ISSUED BY:** Bureau Veritas Consumer Products Services  
(H.K.) Ltd., Taoyuan Branch

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## TABLE OF CONTENTS

RELEASE CONTROL RECORD .....	3
1. CERTIFICATION .....	4
2. RF EXPOSURE .....	5
2.1 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE) .....	5
2.2 MPE CALCULATION FORMULA .....	5
2.3 CLASSIFICATION .....	5
2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER .....	6



## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA120719C20C	Original release	May 23, 2014

## 1. CERTIFICATION

**PRODUCT:** 802.11 a/b/g/n Dual-Radio PoE Access Point

**MODEL:** NWA1123-NI, NWA5123-NI

**BRAND:** ZyXEL

**APPLICANT:** ZyXEL Communications Corporation

**TESTED:** Apr. 09 ~ May 21, 2014

**TEST SAMPLE:** ENGINEERING SAMPLE

**STANDARDS:** FCC Part 2 (Section 2.1091)

FCC OET Bulletin 65, Supplement C (01-01)

IEEE C95.1

The above equipment (Model: NWA1123-NI) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** :  , **DATE** : May 23, 2014  
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**APPROVED BY** :  , **DATE** : May 23, 2014  
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## 2. RF EXPOSURE

### 2.1 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)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 2.2 MPE CALCULATION FORMULA

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

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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

### 2.3 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 22cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.4 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

FREQUENCY BAND (MHz)	MAX POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412-2462	24.46	7.96	22	0.287	1
5180-5240	16.87	8.67	22	0.059	1
5745-5825	27.16	8.67	22	0.629	1

2.4GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2] = 7.96\text{dBi}$   
5.0GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2] = 8.67\text{dBi}$

### CONCLUSION:

Only 2.4 and 5GHz can transmit simultaneously. The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

1. WLAN 2.4G + WLAN 5.0G =  $0.287 + 0.629 = 0.916$

Therefore, the maximum calculation of this situation is 0.916, which is less than the "1" limit.