

## RF Exposure Report

**Report No.:** SA160205C08

**FCC ID:** PY315200317

**Test Model:** EX7300

**Received Date:** Feb. 04, 2016

**Test Date:** Feb. 23 ~ Mar. 17, 2016

**Issued Date:** Mar. 18, 2016

**Applicant:** NETGEAR, INC.

**Address:** 350 East Plumeria Drive San Jose, CA 95134

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

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

**Test Location:** No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specifically mentioned, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.



### Table of Contents

<b>Release Control Record</b> .....	<b>3</b>
<b>1 Certificate of Conformity</b> .....	<b>4</b>
<b>2 RF Exposure</b> .....	<b>5</b>
2.1 Limits for Maximum Permissible Exposure (MPE).....	5
2.2 MPE Calculation Formula .....	5
2.3 Classification .....	5
<b>3 Calculation Result of Maximum Conducted Power</b> .....	<b>6</b>



A D T

### Release Control Record

Issue No.	Description	Date Issued
SA160205C08	Original release.	Mar. 18, 2016



**1 Certificate of Conformity**

**Product:** Nighthawk X4 AC2200 WiFi Range Extender

**Brand:** NETGEAR

**Test Model:** EX7300

**Sample Status:** Engineering sample

**Applicant:** NETGEAR, INC.

**Test Date:** Feb. 23 ~ Mar. 17, 2016

**Standards:** FCC Part 2 (Section 2.1091)  
KDB 447498 D01 (October 23, 2015)  
IEEE C95.1

The above equipment 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 :**                     *Suntee Liu*                     , **Date:**                     Mar. 18, 2016                      
Suntee Liu / Specialist

**Approved by :**                     *Ken Liu*                     , **Date:**                     Mar. 18, 2016                      
Ken Liu / Senior Manager

## 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

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

where

Pd = power density in mW/cm<sup>2</sup>

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

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 29cm away from the body of the user. So, this device is classified as **Mobile Device**.

### 3 Calculation Result of Maximum Conducted Power

#### CDD Mode

Band	Modulation type	Frequency (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2.4GHz	802.11b	2412	25.56	7.16	29	0.177	1
		2437	27.25	7.69	29	0.295	1
		2462	25.53	8.27	29	0.227	1
	802.11g	2412	22.85	7.16	29	0.095	1
		2437	27.36	7.69	29	0.303	1
		2462	24.06	8.27	29	0.162	1
	802.11n (HT20)	2412	21.71	7.16	29	0.073	1
		2437	27.50	7.69	29	<b>0.313</b>	1
		2462	21.95	8.27	29	0.100	1
	802.11n (HT40)	2422	19.31	7.30	29	0.043	1
		2437	21.68	7.69	29	0.082	1
		2452	19.88	8.07	29	0.059	1
5GHz (U-NII-1)	802.11a	5180	27.13	8.60	29	0.354	1
		5200	28.04	8.76	29	0.453	1
		5240	27.39	9.01	29	0.413	1
	802.11ac (VHT20)	5180	27.11	8.60	29	0.352	1
		5200	27.90	8.76	29	0.439	1
		5240	27.20	9.01	29	0.395	1
	802.11ac (VHT40)	5190	25.66	8.64	29	0.255	1
		5230	27.46	8.89	29	0.408	1
	802.11ac (VHT80)	5210	25.76	8.87	29	0.275	1
	5GHz (U-NII-3)	802.11a	5745	27.20	9.39	29	0.432
5785			28.76	9.56	29	<b>0.643</b>	1
5825			27.35	9.63	29	0.472	1
802.11ac (VHT20)		5745	27.07	9.39	29	0.419	1
		5785	28.73	9.56	29	0.638	1
		5825	27.22	9.63	29	0.458	1
802.11ac (VHT40)		5755	25.83	9.47	29	0.321	1
		5795	26.33	9.61	29	0.372	1
802.11ac (VHT80)		5775	25.58	9.56	29	0.309	1

Note:

2412: Directional gain =  $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 7.16\text{dBi}$

2437: Directional gain =  $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 7.69\text{dBi}$

2462: Directional gain =  $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 8.27\text{dBi}$

2422: Directional gain =  $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 7.30\text{dBi}$

2452: Directional gain =  $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 8.07\text{dBi}$

5180: Directional gain =  $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 8.60\text{dBi}$

- 5200: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.76\text{dBi}$
- 5240: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.01\text{dBi}$
- 5190: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.64\text{dBi}$
- 5230: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.89\text{dBi}$
- 5210: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.87\text{dBi}$
- 5745: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.39\text{dBi}$
- 5785: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.56\text{dBi}$
- 5825: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.63\text{dBi}$
- 5755: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.47\text{dBi}$
- 5795: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.61\text{dBi}$
- 5775: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.56\text{dBi}$

**Beamforming Mode**

Band	Modulation type	Frequency (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
5GHz (U-NII-1)	802.11ac (VHT20)	5180	26.99	8.60	29	0.343	1
		5200	26.99	8.76	29	0.356	1
		5240	26.89	9.01	29	0.368	1
	802.11ac (VHT40)	5190	25.43	8.64	29	0.242	1
		5230	27.07	8.89	29	0.373	1
	802.11ac (VHT80)	5210	25.26	8.87	29	0.245	1
5GHz (U-NII-3)	802.11ac (VHT20)	5745	26.31	9.39	29	0.352	1
		5785	26.28	9.56	29	0.363	1
		5825	26.33	9.63	29	0.373	1
	802.11ac (VHT40)	5755	25.57	9.47	29	0.302	1
		5795	26.30	9.61	29	0.369	1
		802.11ac (VHT80)	5775	25.41	9.56	29	0.297

**Note:**

- 5180: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.60\text{dBi}$
- 5200: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.76\text{dBi}$
- 5240: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.01\text{dBi}$
- 5190: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.64\text{dBi}$
- 5230: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.89\text{dBi}$
- 5210: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.87\text{dBi}$
- 5745: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.39\text{dBi}$
- 5785: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.56\text{dBi}$
- 5825: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.63\text{dBi}$
- 5755: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.47\text{dBi}$
- 5795: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.61\text{dBi}$
- 5775: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.56\text{dBi}$

**Conclusion:**

The formula of calculated the MPE is:  
 $CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$   
 CPD = Calculation power density  
 LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz = 0.313 + 0.643 = 0.956

Therefore all the maximum calculations of above situations are less than the "1" limit.

**---END---**