

## 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.)



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### 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 :** Sunt Lee, **Date:** Mar. 18, 2016  
Sunt Lee / 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

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

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	1
		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 =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 7.16\text{dBi}$

2437: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 7.69\text{dBi}$

2462: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.27\text{dBi}$

2422: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 7.30\text{dBi}$

2452: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 8.07\text{dBi}$

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 =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N] = 9.56\text{dBi}$

### 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	1

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.

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