

## RF Exposure Report

**Report No.:** SA160205C08H

**FCC ID:** PY315300322

**Test Model:** EX6400

**Received Date:** Nov. 01, 2016

**Test Date:** Dec. 02 ~ Dec. 27, 2016

**Issued Date:** Jan. 09, 2017

**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   |
|--------------|-------------------|---------------|
| SA160205C08H | Original release. | Jan. 09, 2017 |

## 1 Certificate of Conformity

**Product:** AC1900 WiFi Range Extender

**Brand:** NETGEAR

**Test Model:** EX6400

**Sample Status:** Engineering sample

**Applicant:** NETGEAR, INC.

**Test Date:** Dec. 02 ~ Dec. 27, 2016

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

KDB 447498 D01 General RF Exposure Guidance v06

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:** Jan. 09, 2017  
Sunt Lee / Specialist

**Approved by :** Ken Liu , **Date:** Jan. 09, 2017  
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

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

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 26cm 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> ) |
|--------------|------------------|-----------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412~2462Hz  | 802.11b          | 2412            | 23.75           | 5.02               | 26            | 0.089                               | 1                           |
|              |                  | 2437            | 25.48           | 5.57               | 26            | 0.150                               | 1                           |
|              |                  | 2462            | 23.75           | 6.25               | 26            | 0.118                               | 1                           |
|              | 802.11g          | 2412            | 20.96           | 5.02               | 26            | 0.047                               | 1                           |
|              |                  | 2437            | 25.58           | 5.57               | 26            | 0.153                               | 1                           |
|              |                  | 2462            | 22.13           | 6.25               | 26            | 0.081                               | 1                           |
|              | 802.11n (HT20)   | 2412            | 19.75           | 5.02               | 26            | 0.035                               | 1                           |
|              |                  | 2437            | 25.76           | 5.57               | 26            | <b>0.160</b>                        | 1                           |
|              |                  | 2462            | 19.95           | 6.25               | 26            | 0.049                               | 1                           |
|              | 802.11n (HT40)   | 2422            | 17.45           | 5.12               | 26            | 0.021                               | 1                           |
|              |                  | 2437            | 19.85           | 5.57               | 26            | 0.041                               | 1                           |
|              |                  | 2452            | 17.85           | 5.93               | 26            | 0.028                               | 1                           |
| 5180~5240MHz | 802.11a          | 5180            | 27.13           | 8.60               | 26            | 0.440                               | 1                           |
|              |                  | 5200            | 28.04           | 8.76               | 26            | 0.563                               | 1                           |
|              |                  | 5240            | 27.39           | 9.01               | 26            | 0.514                               | 1                           |
|              | 802.11ac (VHT20) | 5180            | 27.11           | 8.60               | 26            | 0.438                               | 1                           |
|              |                  | 5200            | 27.90           | 8.76               | 26            | 0.546                               | 1                           |
|              |                  | 5240            | 27.20           | 9.01               | 26            | 0.492                               | 1                           |
|              | 802.11ac (VHT40) | 5190            | 25.66           | 8.64               | 26            | 0.317                               | 1                           |
|              |                  | 5230            | 27.46           | 8.89               | 26            | 0.508                               | 1                           |
|              | 802.11ac (VHT80) | 5210            | 25.76           | 8.87               | 26            | 0.342                               | 1                           |
| 5250~5350MHz | 802.11a          | 5260            | 20.35           | 9.01               | 26            | 0.102                               | 1                           |
|              |                  | 5300            | 20.43           | 8.98               | 26            | 0.103                               | 1                           |
|              |                  | 5320            | 20.41           | 9.08               | 26            | 0.105                               | 1                           |
|              | 802.11ac (VHT20) | 5260            | 20.51           | 9.01               | 26            | 0.105                               | 1                           |
|              |                  | 5300            | 20.54           | 8.98               | 26            | 0.105                               | 1                           |
|              |                  | 5320            | 20.48           | 9.08               | 26            | 0.106                               | 1                           |
|              | 802.11ac (VHT40) | 5270            | 22.00           | 9.01               | 26            | 0.149                               | 1                           |
|              |                  | 5310            | 21.44           | 9.08               | 26            | 0.133                               | 1                           |
|              | 802.11ac (VHT80) | 5290            | 21.01           | 8.98               | 26            | 0.117                               | 1                           |
| 5470~5725MHz | 802.11a          | 5500            | 20.48           | 8.97               | 26            | 0.104                               | 1                           |
|              |                  | 5580            | 20.42           | 9.13               | 26            | 0.106                               | 1                           |
|              |                  | 5700            | 20.49           | 9.41               | 26            | 0.115                               | 1                           |
|              | 802.11ac (VHT20) | 5500            | 20.44           | 8.97               | 26            | 0.103                               | 1                           |
|              |                  | 5580            | 20.48           | 9.13               | 26            | 0.108                               | 1                           |
|              |                  | 5700            | 20.47           | 9.41               | 26            | 0.115                               | 1                           |
|              | 802.11ac (VHT40) | 5510            | 21.27           | 9.05               | 26            | 0.127                               | 1                           |
|              |                  | 5550            | 21.76           | 9.28               | 26            | 0.150                               | 1                           |
|              |                  | 5670            | 22.22           | 9.39               | 26            | 0.171                               | 1                           |
|              | 802.11ac (VHT80) | 5530            | 23.87           | 9.17               | 26            | 0.237                               | 1                           |
|              |                  | 5610            | 23.75           | 9.31               | 26            | 0.238                               | 1                           |
| 5745~5825MHz | 802.11a          | 5745            | 28.77           | 9.39               | 26            | 0.771                               | 1                           |
|              |                  | 5785            | 28.76           | 9.56               | 26            | 0.800                               | 1                           |
|              |                  | 5825            | 28.76           | 9.63               | 26            | 0.813                               | 1                           |
|              | 802.11ac (VHT20) | 5745            | 28.72           | 9.39               | 26            | 0.762                               | 1                           |
|              |                  | 5785            | 28.73           | 9.56               | 26            | 0.794                               | 1                           |
|              |                  | 5825            | 28.75           | 9.63               | 26            | 0.811                               | 1                           |
|              | 802.11ac (VHT40) | 5755            | 28.79           | 9.47               | 26            | 0.789                               | 1                           |
|              |                  | 5795            | 28.80           | 9.61               | 26            | <b>0.816</b>                        | 1                           |
|              | 802.11ac (VHT80) | 5775            | 28.71           | 9.56               | 26            | 0.790                               | 1                           |

### 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> ) |
|--------------|------------------|-----------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5180~5240MHz | 802.11ac (VHT20) | 5180            | 26.99           | 8.60               | 26            | 0.426                               | 1                           |
|              |                  | 5200            | 26.99           | 8.76               | 26            | 0.442                               | 1                           |
|              |                  | 5240            | 26.89           | 9.01               | 26            | 0.458                               | 1                           |
|              | 802.11ac (VHT40) | 5190            | 25.43           | 8.64               | 26            | 0.300                               | 1                           |
|              |                  | 5230            | 27.07           | 8.89               | 26            | 0.464                               | 1                           |
|              | 802.11ac (VHT80) | 5210            | 25.26           | 8.87               | 26            | 0.305                               | 1                           |
| 5250~5350MHz | 802.11ac (VHT20) | 5260            | 20.51           | 9.01               | 26            | 0.105                               | 1                           |
|              |                  | 5300            | 20.54           | 8.98               | 26            | 0.105                               | 1                           |
|              |                  | 5320            | 20.48           | 9.08               | 26            | 0.106                               | 1                           |
|              | 802.11ac (VHT40) | 5270            | 20.50           | 9.01               | 26            | 0.105                               | 1                           |
|              |                  | 5310            | 20.44           | 9.08               | 26            | 0.105                               | 1                           |
|              | 802.11ac (VHT80) | 5290            | 19.73           | 8.98               | 26            | 0.087                               | 1                           |
| 5470~5725MHz | 802.11ac (VHT20) | 5500            | 20.44           | 8.97               | 26            | 0.103                               | 1                           |
|              |                  | 5580            | 20.48           | 9.13               | 26            | 0.108                               | 1                           |
|              |                  | 5700            | 20.47           | 9.41               | 26            | 0.115                               | 1                           |
|              | 802.11ac (VHT40) | 5510            | 20.71           | 9.05               | 26            | 0.111                               | 1                           |
|              |                  | 5550            | 20.66           | 9.28               | 26            | 0.116                               | 1                           |
|              |                  | 5670            | 20.58           | 9.39               | 26            | 0.117                               | 1                           |
|              | 802.11ac (VHT80) | 5530            | 20.68           | 9.17               | 26            | 0.114                               | 1                           |
|              |                  | 5610            | 20.63           | 9.31               | 26            | 0.116                               | 1                           |
| 5745~5825MHz | 802.11ac (VHT20) | 5745            | 26.42           | 9.39               | 26            | 0.449                               | 1                           |
|              |                  | 5785            | 26.43           | 9.56               | 26            | 0.468                               | 1                           |
|              |                  | 5825            | 26.34           | 9.63               | 26            | 0.465                               | 1                           |
|              | 802.11ac (VHT40) | 5755            | 26.49           | 9.47               | 26            | 0.464                               | 1                           |
|              |                  | 5795            | 26.38           | 9.61               | 26            | 0.468                               | 1                           |
|              | 802.11ac (VHT80) | 5775            | 26.41           | 9.56               | 26            | 0.465                               | 1                           |

Note:

2412MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 5.02dBi  
2437MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 5.57dBi  
2462MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 6.25dBi  
2422MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 5.12dBi  
2452MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 5.93dBi  
5180MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 8.60dBi  
5200MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 8.76dBi  
5240MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.01dBi  
5190MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 8.64dBi  
5230MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 8.89dBi  
5210MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 8.87dBi  
5260MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.01dBi  
5300MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 8.98dBi  
5320MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.08dBi  
5270MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.01dBi  
5310MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.08dBi  
5290MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 8.98dBi

5500MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 8.97dBi  
 5580MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.13dBi  
 5700MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.41dBi  
 5510MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.05dBi  
 5550MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.28dBi  
 5670MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.39dBi  
 5530MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.17dBi  
 5610MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.31dBi  
 5745MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.39dBi  
 5785MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.56dBi  
 5825MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.63dBi  
 5755MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.47dBi  
 5795MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.61dBi  
 5775MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N]$  = 9.56dBi

### Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + .....etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz = 0.160 + 0.816 = 0.976 < 1

---END---