

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 ²) | 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/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 ²) | Limit (mW/cm ²) |
|--------------|------------------|-----------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 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 | 0.160 | 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 | 0.816 | 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 ²) | Limit (mW/cm ²) |
|--------------|------------------|-----------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 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 = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 5.02\text{dBi}$
2437MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 5.57\text{dBi}$
2462MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 6.25\text{dBi}$
2422MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 5.12\text{dBi}$
2452MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 5.93\text{dBi}$
5180MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 8.60\text{dBi}$
5200MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 8.76\text{dBi}$
5240MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 9.01\text{dBi}$
5190MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 8.64\text{dBi}$
5230MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 8.89\text{dBi}$
5210MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 8.87\text{dBi}$
5260MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 9.01\text{dBi}$
5300MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 8.98\text{dBi}$
5320MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 9.08\text{dBi}$
5270MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 9.01\text{dBi}$
5310MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 9.08\text{dBi}$
5290MHz: Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2/N] = 8.98\text{dBi}$

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---