RF Exposure Report

Report No.:	SA160205C08D
FCC ID:	PY315300322
Test Model:	EX6400
Received Date:	Feb. 04, 2016
Test Date:	Feb. 23 ~ Mar. 17, 2016 (For 2.4GHz and U-NII-1 Band) May 13 ~ May 31, 2016 (For U-NII-3 Band)
Issued Date:	Jun. 03, 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
SA160205C08D	Original release.	Jun. 03, 2016

1 Certificate of Conformity

Product:	AC1900 WiFi Range Extender
Brand:	NETGEAR
Test Model:	EX6400
Sample Status:	Engineering sample
Applicant:	NETGEAR, INC.
Test Date:	Feb. 23 ~ Mar. 17, 2016 (For 2.4GHz and U-NII-1 Band) May 13 ~ May 31, 2016 (For U-NII-3 Band)
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 : _____ , **Date:** Jun. 03, 2016

Suntee Liu / Specialist

Approved by : _____ , **Date:** Jun. 03, 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^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

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

where

Pd = power density in mW/cm^2

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 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)
2.4GHz	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
5GHz (U-NII-1)	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
5GHz (U-NII-3)	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

Note:

2412: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N$] = 5.02dBi

2437: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N$] = 5.57dBi

2462: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N$] = 6.25dBi

2422: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N$] = 5.12dBi

2452: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N$] = 5.93dBi

5180: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/N$] = 8.60dBi

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

Beamforming Mode

Band	Modulation type	Frequency (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5GHz (U-NII-1)	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
5GHz (U-NII-3)	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:
5180: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 8.60dBi
5200: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 8.76dBi
5240: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 9.01dBi
5190: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 8.64dBi
5230: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 8.89dBi
5210: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 8.87dBi
5745: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 9.39dBi
5785: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 9.56dBi
5825: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 9.63dBi
5755: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 9.47dBi
5795: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^2/N] = 9.61dBi
5775: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ + ... + $10^{GN/20}$)^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
Therefore all the maximum calculations of above situations are less than the “1” limit.

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