

RF Exposure Report

Report No.: SA150410E09

FCC ID: PY315100300

Test Model: R6400

Received Date: Apr. 10, 2015

Test Date: Apr. 17, 2015

Issued Date: Apr. 28, 2015

Applicant: NETGEAR, Inc.

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

Issue No.	Description	Date Issued
SA150410E09	Original release.	Apr. 28, 2015

1 Certificate of Conformity

Product: AC1750 Smart WiFi Router

Brand: NETGEAR

Test Model: R6400

Sample Status: ENGINEERING SAMPLE

Applicant: NETGEAR, Inc.

Test Date: Apr. 17, 2015

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D03

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 :


Elsie Hsu / Specialist

Date:

Apr. 28, 2015

Approved by :


May Chen / Manager

Date:

Apr. 28, 2015

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 33cm away from the body of the user.

So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

The antennas provided to the EUT, please refer to the following table:

Antenna No.	Transmitter Circuit	Ant. Gain(dBi) <Including cable loss>	Frequency range (GHz to GHz)	Ant. Type	Connector Type
98612PIPF003	Chain (0)	3.4	2.4~2.4835	Dipole	R-SMA
		3.94	5.15~5.25		
		3.73	5.725~5.85		
98612PIPF004	Chain (1)	3.23	2.4~2.4835	Dipole	R-SMA
		3.66	5.15~5.25		
		3.77	5.725~5.85		
98612PIPF005	Chain (2)	3.36	2.4~2.4835	Dipole	R-SMA
		3.32	5.15~5.25		
		3.74	5.725~5.85		

3 Calculation Result of Maximum Conducted Power

CDD MODE

For 15.247:

802.11b

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	537.365	8.1	33	0.25353	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.1 \text{dBi}$$

802.11g

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	536.684	8.1	33	0.25321	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.1 \text{dBi}$$

802.11n (HT20)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	435.03	8.1	33	0.20525	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.1 \text{dBi}$$

802.11n (HT40)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2422-2452	112.913	8.1	33	0.05327	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.1 \text{dBi}$$

For 15.247:

802.11a

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5745-5825	915.893	8.52	33	0.47600	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.52\text{dBi}$$

802.11ac (VHT20)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5745-5825	896.802	8.52	33	0.46608	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.52\text{dBi}$$

802.11ac (VHT40)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5755-5795	894.191	8.52	33	0.46472	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.52\text{dBi}$$

802.11ac (VHT80)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5775	419.248	8.52	33	0.21789	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.52\text{dBi}$$

For 15.407:

802.11a

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5180-5240	274.765	8.41	33	0.13923	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.41\text{dBi}$$

Beamforming MODE

For 15.247:

802.11ac (VHT20)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5745-5825	555.34	8.52	33	0.28862	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.52\text{dBi}$$

802.11ac (VHT40)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5755-5795	557.193	8.52	33	0.28958	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.52\text{dBi}$$

802.11ac (VHT80)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5775	419.248	8.52	33	0.21789	1

NOTE:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.52\text{dBi}$$

For 15.407:

802.11ac (VHT20)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5180-5240	331.812	8.41	33	0.16813	1

NOTE:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.41\text{dBi}$

802.11ac (VHT40)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5190-5230	278.695	8.41	33	0.14122	1

NOTE:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.41\text{dBi}$

802.11ac (VHT80)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5210	103.865	8.41	33	0.05263	1

NOTE:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.41\text{dBi}$

CONCLUSION:

Both of the 2.4GHz and 5GHz can transmit simultaneously, the formula of calculated the MPE is:

$CPD_1 / LPD_1 + CPD_2 / LPD_2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

Therefore, the worst-case situation is $0.25353 / 1 + 0.47600 / 1 = 0.730$, which is less than "1".

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