RF Exposure Report

Report No.: SA150430E02

FCC ID: PY315200309

Test Model: R8500

Received Date: May 06, 2015

Test Date: May 14 to 15, 2015

Issued Date: May 21, 2015

Applicant: NETGEAR, Inc.

Address: 350 East Plumeria Drive San Jose, CA 95134

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

Lab Address: No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

Test Location (1): No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

Test Location (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
SA150430E02	Original release.	May 21, 2015

1 Certificate of Conformity

Product: Nighthawk X8 Tri Band WiFi Router

Brand: NETGEAR

Test Model: R8500

Sample Status: ENGINEERING SAMPLE

Applicant: NETGEAR, Inc.

Test Date: May 14 to 15, 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 : _____ , **Date:** _____ May 21, 2015 _____

Midoli Peng / Specialist

Approved by : _____ , **Date:** _____ May 21, 2015 _____

May Chen / 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 43cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Antenna Gain

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

Antenna No.	Ant. Gain(dBi)	Frequency range (GHz to GHz)	Antenna Type	Connecter Type
Internal (1)	3.99	5.15~5.25GHz	Dipole	i-pex(MHF)
Internal (2)	3.71	5.25~5.35GHz	Dipole	i-pex(MHF)
Internal (3)	3.71	5.47~5.725GHz	Dipole	i-pex(MHF)
Internal (4)	3.98	5.725~5.85GHz	Dipole	i-pex(MHF)
External (1)	0.67	2.4~2.4835GHz	Dipole	i-pex(MHF)
	-0.84	5.15~5.25GHz	Dipole	i-pex(MHF)
	-1.38	5.25~5.35GHz	Dipole	i-pex(MHF)
	-1.6	5.47~5.725GHz	Dipole	i-pex(MHF)
	-1.79	5.725~5.85GHz	Dipole	i-pex(MHF)
External (2)	0.67	2.4~2.4835GHz	Dipole	i-pex(MHF)
	-0.84	5.15~5.25GHz	Dipole	i-pex(MHF)
	-1.38	5.25~5.35GHz	Dipole	i-pex(MHF)
	-1.6	5.47~5.725GHz	Dipole	i-pex(MHF)
	-1.79	5.725~5.85GHz	Dipole	i-pex(MHF)
External (3)	0.67	2.4~2.4835GHz	Dipole	i-pex(MHF)
	-0.84	5.15~5.25GHz	Dipole	i-pex(MHF)
	-1.38	5.25~5.35GHz	Dipole	i-pex(MHF)
	-1.6	5.47~5.725GHz	Dipole	i-pex(MHF)
	-1.79	5.725~5.85GHz	Dipole	i-pex(MHF)
External (4)	0.67	2.4~2.4835GHz	Dipole	i-pex(MHF)
	-0.84	5.15~5.25GHz	Dipole	i-pex(MHF)
	-1.38	5.25~5.35GHz	Dipole	i-pex(MHF)
	-1.6	5.47~5.725GHz	Dipole	i-pex(MHF)
	-1.79	5.725~5.85GHz	Dipole	i-pex(MHF)

4   Calculation Result of Maximum Conducted Power

For 15.247(2.4GHz)

CDD Mode

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	940.551	6.69	43	0.18890	1

NOTE:

Directional gain = 0.67dBi + 10log(4) = 6.69dBi

For 15.247(5GHz)

With Internal antenna

CDD Mode

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5745-5825	949.109	10	43	0.40848	1

Beamforming Mode

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5745-5825	391.755	10	43	0.16080	1

NOTE:

Directional gain = 3.98dBi + 10log(4) = 10dBi

With External antenna

CDD Mode

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5745-5825	922.296	4.23	43	0.10513	1

Beamforming Mode

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5745-5825	957.105	4.23	43	0.10910	1

NOTE:

Directional gain = -1.79dBi + 10log(4) = 4.23dBi

For 15.407(5GHz)
With Internal antenna

CDD Mode

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5180-5240	965.588	10.01	43	0.41653	1

Beamforming Mode

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5180-5240	389.388	10.01	43	0.16797	1

NOTE:

Directional gain = 3.99dBi + 10log(4) = 10.01dBi

With External antenna

CDD Mode

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5180-5240	862.421	5.18	43	0.12234	1

Beamforming Mode

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5180-5240	997.542	5.18	43	0.14151	1

NOTE:

Directional gain = -0.84dBi + 10log(4) = 5.18dBi

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

Condition	Technology		
1	WLAN(2.4GHz) - External Antenna	WLAN(5GHz <5150~5250MHz>) - External Antenna	WLAN(5GHz <5725~5850MHz>) - Internal Antenna
2	WLAN(2.4GHz) - External Antenna	WLAN(5GHz <5150~5250MHz>) - Internal Antenna	WLAN(5GHz <5725~5850MHz>) - External Antenna

Condition 1 : 0.18890 + 0.14151 + 0.40848 = 0.73889

Condition 2 : 0.18890 + 0.41653 + 0.10910 = 0.71453

Therefore the maximum calculations of above situations are less than the "1" limit.

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