RF Exposure Report

Report No.:	SA150430E10
FCC ID:	PY315200310
Test Model:	R7800
Received Date:	Mar. 25, 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
SA150430E10	Original release.	May 21, 2015

1 Certificate of Conformity

Product:	Nighthawk X4S Smart WIFI Router
Brand:	NETGEAR
Test Model:	R7800
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
Lori Chung / 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 32cm 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
External (1)	0.67	2.4~2.4835	Dipole	i-pex(MHF)
	1.16	5.15~5.25	Dipole	i-pex(MHF)
	0.62	5.25~5.35	Dipole	i-pex(MHF)
	0.4	5.47~5.725	Dipole	i-pex(MHF)
	0.21	5.725~5.85	Dipole	i-pex(MHF)
External (2)	0.67	2.4~2.4835	Dipole	i-pex(MHF)
	1.16	5.15~5.25	Dipole	i-pex(MHF)
	0.62	5.25~5.35	Dipole	i-pex(MHF)
	0.4	5.47~5.725	Dipole	i-pex(MHF)
	0.21	5.725~5.85	Dipole	i-pex(MHF)
External (3)	0.67	2.4~2.4835	Dipole	i-pex(MHF)
	1.16	5.15~5.25	Dipole	i-pex(MHF)
	0.62	5.25~5.35	Dipole	i-pex(MHF)
	0.4	5.47~5.725	Dipole	i-pex(MHF)
	0.21	5.725~5.85	Dipole	i-pex(MHF)
External (4)	0.67	2.4~2.4835	Dipole	i-pex(MHF)
	1.16	5.15~5.25	Dipole	i-pex(MHF)
	0.62	5.25~5.35	Dipole	i-pex(MHF)
	0.4	5.47~5.725	Dipole	i-pex(MHF)
	0.21	5.725~5.85	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	962.497	6.69	32	0.34905	1

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

For 15.247(5GHz)

CDD Mode					
Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5745-5825	944.69	6.23	32	0.30816	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	937.418	6.23	32	0.30579	1

NOTE:
Directional gain = 0.21dBi + 10log(4) = 6.23dBi

For 15.407(5GHz)

CDD Mode					
Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5180-5240	951.947	7.18	32	0.38646	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	744.333	7.18	32	0.30217	1

NOTE:

Directional gain = 1.16dBi + 10log(4) = 7.18dBi

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 = 0.34905 + 0.38646 = 0.73551

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

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