



RF Exposure Report

Report No.: SA141003E10B

FCC ID: PY314300283

Test Model: EX6150

Received Date: Apr. 17, 2015

Test Date: July 21, 2015

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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
SA141003E10B	Original release.	Aug. 03, 2015



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1 Certificate of Conformity

Product: AC1200 WiFi Range Extender

Brand: NETGEAR

Test Model: EX6150

Sample Status: ENGINEERING SAMPLE


Applicant: NETGEAR, Inc.

Test Date: July 21, 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:** Aug. 03, 2015
Lori Chung / Specialist

Approved by :  , **Date:** Aug. 03, 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/cm²

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 20cm 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:

PCB Chain No.	Brand	Model	Antenna Gain(dBi) < including cable loss>	Frequency range (MHz ~ MHz)	Antenna Type	Connector Type	Cable Length (mm)
Chain 0	NETGEAR	NA	3.1	2400~2500	Dipole	i-pex	50
			2.7	5150~5250			
			2.9	5250~5350			
			2.2	5470~5725			
			2.6	5725~5850			
Chain 1	NETGEAR	NA	3.1	2400~2500	Dipole	i-pex	50
			2.7	5150~5250			
			2.9	5250~5350			
			2.2	5470~5725			
			2.6	5725~5850			



4 Calculation Result of Maximum Conducted Power

For 15.247 (2.4GHz & 5GHz – band 4) and 15.407 (U-NII-1 band) data was copied from the original test report (Report No.: SA141003E10)

For 15.247 (2.4GHz):

802.11b:

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	212.595	6.11	20	0.17270	1

NOTE: Directional gain = 3.1dBi + 10log(2) = 6.11dBi

802.11g:

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	616.801	6.11	20	0.50104	1

NOTE: Directional gain = 3.1dBi + 10log(2) = 6.11dBi

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	471.291	6.11	20	0.38284	1

NOTE: Directional gain = 3.1dBi + 10log(2) = 6.11dBi

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	122.807	6.11	20	0.09976	1

NOTE: Directional gain = 3.1dBi + 10log(2) = 6.11dBi



For 15.247 (5GHz):

802.11a:

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5745-5825	333.071	5.61	20	0.24114	1

NOTE: Directional gain = Directional gain = 2.6dBi + 10log(2) = 5.61dBi

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	329.636	5.61	20	0.23865	1

NOTE: Directional gain = Directional gain = 2.6dBi + 10log(2) = 5.61dBi

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	329.259	5.61	20	0.23838	1

NOTE: Directional gain = Directional gain = 2.6dBi + 10log(2) = 5.61dBi

802.11ac (VHT80)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5775	270.487	5.61	20	0.19583	1

NOTE: Directional gain = Directional gain = 2.6dBi + 10log(2) = 5.61dBi



For 15.407 (5GHz):

802.11a:

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5180-5240	303.086	5.71	20	0.22454	1
5260-5320	246.064	5.91	20	0.19089	1
5500-5580 & 5660-5700	249.768	5.21	20	0.16492	1

NOTE:

For U-NII-1 Band: Directional gain = 2.7dBi + 10log(2) = 5.71dBi

For U-NII-2A Band: Directional gain = 2.9dBi + 10log(2) = 5.91dBi

For U-NII-2C Band: Directional gain = 2.2dBi + 10log(2) = 5.21dBi

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	299.592	5.71	20	0.22195	1
5260-5320	247.222	5.91	20	0.19179	1
5500-5580 & 5660-5700	246.645	5.21	20	0.16286	1

NOTE:

For U-NII-1 Band: Directional gain = 2.7dBi + 10log(2) = 5.71dBi

For U-NII-2A Band: Directional gain = 2.9dBi + 10log(2) = 5.91dBi

For U-NII-2C Band: Directional gain = 2.2dBi + 10log(2) = 5.21dBi

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	266.722	5.71	20	0.19760	1
5270-5310	247.195	5.91	20	0.19176	1
5510-5550 & 5670	236.055	5.21	20	0.15586	1

NOTE:

For U-NII-1 Band: Directional gain = 2.7dBi + 10log(2) = 5.71dBi

For U-NII-2A Band: Directional gain = 2.9dBi + 10log(2) = 5.91dBi

For U-NII-2C Band: Directional gain = 2.2dBi + 10log(2) = 5.21dBi



802.11ac (VHT80)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5210	58.423	5.71	20	0.04328	1
5290	69.616	5.91	20	0.05401	1
5530	55.855	5.21	20	0.03688	1

NOTE:

For U-NII-1 Band: Directional gain = 2.7dBi + 10log(2) = 5.71dBi

For U-NII-2A Band: Directional gain = 2.9dBi + 10log(2) = 5.91dBi

For U-NII-2C Band: Directional gain = 2.2dBi + 10log(2) = 5.21dBi

CONCLUSION:

Both of the 2.4GHz and 5GHz WLAN 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 $0.50104 / 1 + 0.24114 / 1 = 0.742$, which is less than "1".

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