

# **RF Exposure Report**

Report No.: SA141003E10E

FCC ID: PY314300283

Test Model: EX6150

Received Date: Dec. 03, 2014

**Test Date:** Dec. 09, 2014 and Sep. 23, 2015

**Issued Date:** Oct. 01, 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.





This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by any government agencies.

Report No.: SA141003E10E Page No. 1 / 7 Report Format Version: 6.1.1



## **Table of Contents**

Relea	se Control Record	3
1	Certificate of Conformity	. 4
2	RF Exposure	
	Limits for Maximum Permissible Exposure (MPE)	
2.3	MPE Calculation Formula	. 5
2.4	Antenna Gain	. 5
3	Calculation Result of Maximum Conducted Power	. 6



### **Release Control Record**

Issue No.	Description	Date Issued
SA141003E10E	Original release.	Oct. 01, 2015

Page No. 3 / 7 Report Format Version: 6.1.1

Report No.: SA141003E10E Reference No.: 150716E04



#### 1 Certificate of Conformity

Product: AC1200 WiFi Range Extender

**Brand: NETGEAR** 

Test Model: EX6150

Sample Status: ENGINEERING SAMPLE

Applicant: NETGEAR, Inc.

Test Date: Dec. 09, 2014 and Sep. 23, 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.

	Claire Kuan / Specialist			
Approved by :		, Date:	Oct. 01, 2015	
	✓ May Chen /Manager			

, Date:

Oct. 01, 2015

C-L

Report No.: SA141003E10E Reference No.: 150716E04

Prepared by:



#### 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/cm²)	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<sup>2</sup>

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**.

#### 2.4 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	Connecter Type	Cable Length (mm)	
			3.1	2400~2500				
			2.7	5150~5250				
Chain 0	NETGEAR	NA	2.9	5250~5350	Dipole	i-pex	50	
			2.2	5470~5725				
			2.6	5725~5850			ı	
			3.1	2400~2500				
			2.7	5150~5250				
Chain 1	NETGEAR	NA	2.9	5250~5350	Dipole	i-pex	50	
			2.2	5470~5725				
			2.6	5725~5850				

Report No.: SA141003E10E Page No. 5 / 7 Report Format Version: 6.1.1

Reference No.: 150716E04



#### 3 Calculation Result of Maximum Conducted Power

The data (Except U-NII-3 band data) was copied from the original test report (Report No.: SA141003E10) For 15.247:

### 802.11b:

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm²)
2412 ~ 2462	212.595	6.11	20	0.17270	1

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

#### 802.11g:

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm²)	LIMIT (mW/cm²)
2412 ~ 2462	616.801	6.11	20	0.50104	1

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

### 802.11n (HT20):

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm²)	LIMIT (mW/cm²)
2412 ~ 2462	471.291	6.11	20	0.38284	1

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

### 802.11n (HT40):

	FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm²)
ſ	2422 ~ 2452	122.807	6.11	20	0.09976	1

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

Report No.: SA141003E10E Page No. 6 / 7 Report Format Version: 6.1.1



### For 15.407(5GHz):

#### 802.11a:

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm²)	LIMIT (mW/cm²)
5180 ~ 5240	303.086	5.71	20	0.22454	1
5745 ~ 5825	350.003	5.61	20	0.25340	1

For  $5180 \sim 5240$  MHz: Directional gain = 2.7dBi +  $10\log(2) = 5.71$ dBi For  $5745 \sim 5825$  MHz: Directional gain = 2.6dBi +  $10\log(2) = 5.61$ dBi

#### 802.11ac (VHT20)

FREQU (MH		CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm²)	LIMIT (mW/cm²)
5180 ~	5240	299.592	5.71	20	0.22195	1
5745 ~	5825	307.697	5.61	20	0.22277	1

For  $5180 \sim 5240$  MHz: Directional gain = 2.7dBi + 10log(2) = 5.71dBi For  $5745 \sim 5825$  MHz: Directional gain = 2.6dBi + 10log(2) = 5.61dBi

#### 802.11ac (VHT40)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm²)	LIMIT (mW/cm²)
5190 ~ 5230	266.722	5.71	20	0.19760	1
5755 ~ 5795	243.588	5.61	20	0.17635	1

For  $5180 \sim 5240$  MHz: Directional gain = 2.7dBi + 10log(2) = 5.71dBi For  $5745 \sim 5825$  MHz: Directional gain = 2.6dBi + 10log(2) = 5.61dBi

#### 802.11ac (VHT80)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm²)	LIMIT (mW/cm²)
5210	58.423	5.71	20	0.04328	1
5755	76.481	5.61	20	0.05537	1

For  $5180 \sim 5240$  MHz: Directional gain = 2.7dBi + 10log(2) = 5.71dBi For  $5745 \sim 5825$  MHz: Directional gain = 2.6dBi + 10log(2) = 5.61dBi

#### **CONCLUSION:**

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

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

**CPD** = Calculation power density

LPD = Limit of power density

Therefore, the worst-case situation is 0.50104 / 1 + 0.25340 / 1 = 0.75444, which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

--- END ---