



# RF EXPOSURE REPORT

**REPORT NO.:** SA141003E10

**MODEL NO.:** EX6150

**FCC ID:** PY314300283

**RECEIVED:** Oct. 03, 2014

**TESTED:** Dec. 09, 2014

**ISSUED:** Jan. 12, 2015

**APPLICANT:** NETGEAR, Inc.

**ADDRESS:** 350 East Plumeria Drive San Jose, CA 95134

**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.)  
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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA141003E10	Original release	Jan. 12, 2015



A D T

## 1. CERTIFICATION

**PRODUCT:** AC1200 WiFi Range Extender  
**BRAND NAME:** NETGEAR  
**MODEL NO.:** EX6150  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**APPLICANT:** NETGEAR, Inc.  
**TESTED:** Dec. 09, 2014  
**STANDARDS:** FCC Part 2 (Section 2.1091)  
KDB 447498 D03  
IEEE C95.1

The above equipment (Model: EX6150) 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:** Jan. 12, 2015  
( Lori Chung, Specialist )

**Approved by :**  , **Date:** Jan. 12, 2015  
( May Chen, Manager )

## 2. RF EXPOSURE LIMIT

### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm <sup>2</sup> )	AVERAGE TIME (minutes)
<b>LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE</b>				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 3. MPE CALCULATION FORMULA

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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

### 4. 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**.

## 5. 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			

## 6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

For 15.247(2.4GHz):

802.11b:

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

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

**For 15.247(5GHz):**

**802.11a:**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 ~ 5825	333.071	5.61	20	0.24114	1

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

**802.11ac (VHT20)**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 ~ 5825	329.636	5.61	20	0.23865	1

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

**802.11ac (VHT40)**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5755 ~ 5795	329.259	5.61	20	0.23838	1

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

**802.11ac (VHT80)**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5755	270.487	5.61	20	0.19583	1

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



**For 15.407(5GHz):**  
**802.11a:**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180 ~ 5240	303.086	5.71	20	0.22454	1

Directional gain = 2.7dBi + 10log(2) = 5.71dBi

**802.11ac (VHT20)**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180 ~ 5240	299.592	5.71	20	0.22195	1

Directional gain = 2.7dBi + 10log(2) = 5.71dBi

**802.11ac (VHT40)**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5190 ~ 5230	266.722	5.71	20	0.19760	1

Directional gain = 2.7dBi + 10log(2) = 5.71dBi

**802.11ac (VHT80)**

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5210	58.423	5.71	20	0.04328	1

Directional gain = 2.7dBi + 10log(2) = 5.71dBi

**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". This confirmed that the device comply with FCC 1.1310 MPE limit.

**--- END ---**