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.) 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 should not be used by the client to claim product certification, approval, or endorsement by any government agencies.

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RELEASE CONTROL RECORD

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

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^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

3. 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

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	Connecter 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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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^2)	LIMIT (mW/cm^2)
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:

$CPD_1 / LPD_1 + CPD_2 / LPD_2$ + ……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.

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