RF EXPOSURE REPORT

REPORT NO.:	SA141117E18E-2
MODEL NO.:	EX6120
FCC ID:	PY315200308
RECEIVED:	Nov. 18, 2014
TESTED:	Dec. 17, 2014
ISSUED:	Aug. 17, 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
SA141117E18E-2	Original release	Aug. 17, 2015

1. CERTIFICATION

PRODUCT:	WiFi Range Extender
BRAND NAME:	NETGEAR
MODEL NO.:	EX6120
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	NETGEAR, Inc.
TESTED:	Dec. 17, 2014
STANDARDS:	FCC Part 2 (Section 2.1091)
	KDB 447498 D03
	IEEE C95.1

The above equipment (Model: EX6120) 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. 17, 2015
(Midoli Peng, Specialist)

Approved by : _____ , **Date:** Aug. 17, 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:

Ant. No.	Brand	Model	Antenna Gain(dBi) <including cable loss>	Frequency range (GHz ~ GHz)	Antenna Type	Connecter Type	Cable Length (mm)
Antenna R	NETGEAR	NA	3.1	2.4~2.4835	Dipole	i-pex (MHF)	35
			3	5.15~5.25			
			3.2	5.25~5.35			
			3.2	5.47~5.725			
			3.3	5.725~5.85			
Antenna L	NETGEAR	NA	3.2	2.4~2.4835	Dipole	i-pex (MHF)	75
			4	5.15~5.25			
			4	5.25~5.35			
			3.9	5.47~5.725			
			3.1	5.725~5.85			

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

For 15.247 and 15.407 (U-NII-1 band and U-NII-3 band) data was copied from the original test report (Report No.: SA141117E18E)

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	326.715	6.16	20	0.26847	1

Note: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.16dBi

802.11g

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
2412 ~ 2462	616.958	6.16	20	0.50697	1

Note: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.16dBi

802.11n (HT20)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
2412 ~ 2462	583.627	6.16	20	0.47958	1

Note: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.16dBi

802.11n (HT40)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
2422 ~ 2452	419.89	6.16	20	0.34504	1

Note: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.16dBi

For 15.407 (5GHz_U-NII-1, U-NII-2A & U-NII-2C):

802.11a

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5180 ~ 5240	306.426	6.52	20	0.27356	1
5260 ~ 5320	229.631	6.62	20	0.20978	1
5500 ~ 5700	230.706	6.57	20	0.20835	1

Note: For 5150MHz ~ 5250MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.52dBi
For 5250MHz ~ 5350MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.62dBi
For 5470MHz ~ 5725MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.57dBi

802.11ac (VHT20)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5180 ~ 5240	281.177	6.52	20	0.25102	1
5260 ~ 5320	223.889	6.62	20	0.20453	1
5500 ~ 5700	218.54	6.57	20	0.19736	1

Note: For 5150MHz ~ 5250MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.52dBi
For 5250MHz ~ 5350MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.62dBi
For 5470MHz ~ 5725MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.57dBi

802.11ac (VHT40)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5190 ~ 5230	135.02	6.52	20	0.12054	1
5270 ~ 5310	246.925	6.62	20	0.22558	1
5510 ~ 5670	249.476	6.57	20	0.22530	1

Note: For 5150MHz ~ 5250MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.52dBi
For 5250MHz ~ 5350MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.62dBi
For 5470MHz ~ 5725MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.57dBi

802.11ac (VHT80)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5210	34.846	6.52	20	0.03111	1
5290	57.558	6.62	20	0.05258	1
5530 ~ 5610	154.717	6.57	20	0.13972	1

Note: For 5150MHz ~ 5250MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.52dBi
For 5250MHz ~ 5350MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.62dBi
For 5470MHz ~ 5725MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.57dBi

For 15.407 (5GHz_U-NII-3):

802.11a

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5745 ~ 5825	292.567	6.52	20	0.24319	1

Note: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.52dBi

802.11ac (VHT20)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5745 ~ 5825	281.355	6.52	20	0.23387	1

Note: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.52dBi

802.11ac (VHT40)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5755 ~ 5795	152.769	6.52	20	0.12699	1

Note: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.52dBi

802.11ac (VHT80)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5775	45.764	6.52	20	0.03804	1

Note: Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 6.52dBi

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 0.50697 / 1 + 0.27356 / 1 = 0.781, which is less than “1”. This confirmed that the device comply with FCC 1.1310 MPE limit.

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