RF Exposure Report

Report No.:	SA140812C13B
FCC ID:	PY314100252
Test Model:	C7000BMX
Series Model:	C7000BMy-zzzzzz with this note　"Where y = X if battery is used, and zzzzzz = a different service provider in the same/different country.
Received Date:	Nov. 19, 2014
Test Date:	Dec. 09, 2014
Issued Date:	Apr. 29, 2015
Applicant:	NETGEAR INC.
Address:	350 East Plumeria Drive, San Jose CA 95134, USA
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.

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Release Control Record

Issue No.	Description	Date Issued
SA140812C13B	Original release.	Apr. 29, 2015

1   Certificate of Conformity

Product:	Wireless Cable Data Gateway
Brand:	NETGEAR
Test Model:	C7000BMX
Series Model:	C7000BMy-zzzzzz with this note "Where y = X if battery is used, and zzzzzz = a different service provider in the same/different country.
Sample Status:	ENGINEERING SAMPLE
Applicant:	NETGEAR INC.
Test Date:	Dec. 09, 2014
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.
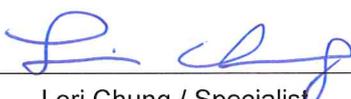
Prepared by : _____ , Date: _____ Apr. 29, 2015 _____
Lori Chung / Specialist

Approved by : _____ , Date: _____ Apr. 29, 2015 _____
May Chen / Manager

2   RF Exposure Limit

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/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

2.3   Classification

The antenna of this product, under normal use condition, is at least 25cm 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:

No.	Transmitter Circuit	Gain (dBi) (Include cable loss)	Frequency range (GHz to GHz)	Antenna Type	Connecter Type
2.4GHz antenna					
1	0	2.07	2.4~2.4835	PIFA	i-pex(MHF)
2	1	2.07	2.4~2.4835	PIFA	i-pex(MHF)
3	2	2.07	2.4~2.4835	PIFA	i-pex(MHF)
5GHz antenna					
4	0	3.33	5.15~5.25	PIFA	i-pex(MHF)
		3.32	5.25~5.35	PIFA	i-pex(MHF)
		3.29	5.47~5.725	PIFA	i-pex(MHF)
		3.28	5.725~5.850	PIFA	i-pex(MHF)
5	1	3.33	5.15~5.25	PIFA	i-pex(MHF)
		3.32	5.25~5.35	PIFA	i-pex(MHF)
		3.29	5.47~5.725	PIFA	i-pex(MHF)
		3.28	5.725~5.850	PIFA	i-pex(MHF)
6	2	3.33	5.15~5.25	PIFA	i-pex(MHF)
		3.32	5.25~5.35	PIFA	i-pex(MHF)
		3.29	5.47~5.725	PIFA	i-pex(MHF)
		3.28	5.725~5.850	PIFA	i-pex(MHF)

4 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.: SA140812C13)

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	713.576	6.84	25	0.43888	1

NOTE: Directional gain = 2.07dBi + 10log(3) = 6.84dBi

802.11g

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
2412 - 2462	596.785	6.84	25	0.36705	1

NOTE: Directional gain = 2.07dBi + 10log(3) = 6.84dBi

802.11n (HT20)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
2412 - 2462	582.197	6.84	25	0.35808	1

NOTE: Directional gain = 2.07dBi + 10log(3) = 6.84dBi

802.11n (HT40)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
2422 - 2452	172.399	6.84	25	0.10603	1

NOTE: Directional gain = 2.07dBi + 10log(3) = 6.84dBi

For 15.407:

802.11a

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5180 ~ 5240	607.881	8.10	25	0.49972	1
5260 ~ 5320	160.593	8.09	25	0.13172	1
5500 ~ 5720	165.607	8.06	25	0.13489	1
5745 ~ 5825	111.92	8.05	25	0.09095	1

NOTE: For U-NII-1 Band: Directional gain = 3.33dBi + 10log(3) = 8.10dBi

For U-NII-2A Band: Directional gain = 3.32dBi + 10log(3) = 8.09dBi

For U-NII-2C Band: Directional gain = 3.29dBi + 10log(3) = 8.06dBi

For U-NII-3 Band: Directional gain = 3.28dBi + 10log(3) = 8.05dBi

802.11ac (VHT20)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5180 ~ 5240	603.665	8.10	25	0.49626	1
5260 ~ 5320	165.999	8.09	25	0.13615	1
5500 ~ 5720	171.285	8.06	25	0.13952	1
5745 ~ 5825	128.489	8.05	25	0.10442	1

NOTE: For U-NII-1 Band: Directional gain = 3.33dBi + 10log(3) = 8.10dBi

For U-NII-2A Band: Directional gain = 3.32dBi + 10log(3) = 8.09dBi

For U-NII-2C Band: Directional gain = 3.29dBi + 10log(3) = 8.06dBi

For U-NII-3 Band: Directional gain = 3.28dBi + 10log(3) = 8.05dBi

802.11ac (VHT40)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5190 ~ 5230	184.445	8.10	25	0.15163	1
5270 ~ 5310	185.197	8.09	25	0.15189	1
5510 ~ 5710	242.814	8.06	25	0.19778	1
5755 ~ 5795	168.443	8.05	25	0.13689	1

NOTE: For U-NII-1 Band: Directional gain = 3.33dBi + 10log(3) = 8.10dBi

For U-NII-2A Band: Directional gain = 3.32dBi + 10log(3) = 8.09dBi

For U-NII-2C Band: Directional gain = 3.29dBi + 10log(3) = 8.06dBi

For U-NII-3 Band: Directional gain = 3.28dBi + 10log(3) = 8.05dBi

802.11ac (VHT80)

FREQUENCY (MHz)	CONDUCTED POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
5210	33.403	8.10	25	0.02746	1
5290	67.016	8.09	25	0.05497	1
5530 ~ 5690	230.44	8.06	25	0.18770	1
5775	32.553	8.05	25	0.02645	1

NOTE: For U-NII-1 Band: Directional gain = 3.33dBi + 10log(3) = 8.10dBi

    For U-NII-2A Band: Directional gain = 3.32dBi + 10log(3) = 8.09dBi

    For U-NII-2C Band: Directional gain = 3.29dBi + 10log(3) = 8.06dBi

    For U-NII-3 Band: Directional gain = 3.28dBi + 10log(3) = 8.05dBi

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 0.43888 / 1 + 0.49972 / 1 = 0.939, which is less than "1".

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