

RF Exposure Report

Report No.: SA160714C04

FCC ID: PY316200340

Test Model: C7800

Received Date: July 14, 2016

Test Date: Nov. 22, 2016

Issued Date: Dec. 13, 2016

Applicant: NETGEAR INC.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Release Control Record

Issue No.	Description	Date Issued
SA160714C04	Original release.	Dec. 13, 2016

1 Certificate of Conformity

Product: AC3200 WiFi Cable Modem Router

Brand: NETGEAR

Test Model: C7800

Sample Status: ENGINEERING SAMPLE

Applicant: NETGEAR INC.

Test Date: Nov.22, 2016

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

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 : Midoli Peng , **Date:** Dec. 13, 2016
Midoli Peng / Specialist

Approved by : May Chen , **Date:** Dec. 13, 2016
May Chen / Manager

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/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/cm²

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 40cm 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:

Antenna No.	Transmitter Circuit	Antenna Gain(dBi)	Frequency range (GHz ~ GHz)	Antenna Type	Connector Type
1	Chain (0)	3.06	2.4~2.4835	Dipole	i-pex(MHF)
		2.68	5.15~5.25		
		2.55	5.725~5.85		
2	Chain (1)	3.06	2.4~2.4835	Dipole	i-pex(MHF)
		2.68	5.15~5.25		
		2.55	5.725~5.85		
3	Chain (2)	3.06	2.4~2.4835	Dipole	i-pex(MHF)
		2.68	5.15~5.25		
		2.55	5.725~5.85		
4	Chain (3)	3.06	2.4~2.4835	Dipole	i-pex(MHF)
		2.68	5.15~5.25		
		2.55	5.725~5.85		

The Directional gain table:

Frequency (MHz)	Max Gain (dBi)
2.4GHz band	8.49dBi (Nss=1) , 5.48dBi (Nss=2)
5GHz (UNII-1) band	8.15dBi (Nss=1), 5.14dBi (Nss=2)
5GHz (UNII-3) band	7.21dBi (Nss=1), 4.2dBi (Nss=2)

Note:

1. Non-TxBF mode & TxBF mode antenna gain refer to KDB 662911 F 2) f) (ii)

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;

G_k is the gain in dBi of the k th antenna.

2.5 Calculation Result Of Maximum Conducted Power

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	1419.252	8.49	40	0.49857	1
5180-5240	1419.252	8.15	40	0.46103	1
5745-5825	1419.252	7.21	40	0.37130	1

NOTE:

2.4GHz: Directional gain = 8.49dBi

5GHz (UNII-1 band): Directional gain = 8.15dBi

5GHz (UNII-3 band): Directional gain = 7.21dBi

Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

$WLAN\ 2.4GHz + WLAN\ 5GHz = 0.49857 / 1 + 0.46103 / 1 = 0.9596$

Therefore the maximum calculations of above situations are less than the "1" limit.

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