

RF Exposure Report

Report No.: SA161125E01

FCC ID: PY316400361

Test Model: RBW30

Received Date: Nov. 25, 2016

Test Date: Dec. 21, 2016 to Jan. 07, 2017

Issued Date: Feb. 10, 2017

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
SA161125E01	Original release.	Feb. 10, 2017

1 Certificate of Conformity

Product: Orbi Wall Plug Satellite

Brand: NETGEAR

Test Model: RBW30

Sample Status: ENGINEERING SAMPLE

Applicant: NETGEAR, Inc.

Test Date: Dec. 21, 2016 to Jan. 07, 2017

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 :



Date:

Feb. 10, 2017

Wendy Wu / Specialist

Approved by :



Date:

Feb. 10, 2017

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

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

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 23cm away from the body of the user.

So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

WLAN (Radio 1) Antenna				
Antenna No.	Ant. Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type
1	3	2.4~2.4835	PIFA	NA
	4.5	5.47~5.725		
	4.4	5.725~5.85		
2	3.5	2.4~2.4835	PIFA	NA
	3.9	5.47~5.725		
	4	5.725~5.85		
WLAN (Radio 2) Antenna				
Antenna No.	Ant. Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type
3	3.6	5.15~5.25	PIFA	NA
	3.7	5.25~5.35		
4	3.2	5.15~5.25	PIFA	NA
	3.3	5.25~5.35		
Bluetooth (Radio 3) Antenna				
Antenna No.	Ant. Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type
5	2.1	2.4~2.4835	Chip	NA

Directional gain table

Frequency (MHz)	Max Gain (dBi)
2412-2462	5.99
5180-5240	3.81
5745-5825	5.52

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. Above directional gain were calculated from actual measurement data.

2.5 Calculation Result of Maximum Conducted Power

For Radio 1 (WLAN: Dual Band):

Frequency (MHz)	Max. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	798.221	5.99	23	0.47693	1
5745-5825	567.608	5.52	23	0.30436	1

For Radio 2 (WLAN: Single Band):

Frequency (MHz)	Max. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
5180-5240	309.071	3.81	23	0.11179	1

For Radio 3 (BT-LE):

Frequency (MHz)	Max. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2402-2480	7.78	2.1	23	0.00190	1

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

$$\text{WLAN 2.4GHz} + \text{WLAN 5GHz(UNII-3)} + \text{WLAN 5GHz(UNII-1)} + \text{BT-LE}$$

$$= 0.47693 / 1 + 0.30436 / 1 + 0.11179 / 1 + 0.00190 / 1$$

$$= 0.89498$$

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

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