

## 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.

**Address:** 350 East Plumeria Drive San Jose, CA 95134

**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 <sup>2</sup> )	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/cm<sup>2</sup>

$P_{out}$  = 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 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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
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

WLAN 2.4GHz + WLAN 5GHz(UNII-3) + WLAN 5GHz(UNII-1) + 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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