RF Exposure Report

Report No.: SA161229C25A

FCC ID: PY316400362

Test Model: RBR40

Series Model: RBS40

Received Date: Dec. 22, 2016

Test Date: Dec. 23, 2016 ~ Mar. 15, 2017

Issued Date: Mar. 16, 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

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SA161229C25A	Original release.	Mar. 16, 2017

1   Certificate of Conformity

Product:	Orbi Router, Orbi Satellite
Brand:	NETGEAR
Test Model:	RBR40
Series Model:	RBS40
Sample Status:	Engineering sample
Applicant:	NETGEAR, INC.
Test Date:	Dec. 23, 2016 ~ Mar. 15, 2017
Standards:	FCC Part 2 (Section 2.1091)
	KDB 447498 D03 (January 17, 2014)
	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.
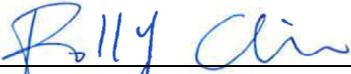
Prepared by : _____ , **Date:** _____ Mar. 16, 2017 _____
Polly Chien / Specialist

Approved by : _____ , **Date:** _____ Mar. 16, 2017 _____
Ken Liu / Senior 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/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 29cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN					
CDD Mode					
2412-2462	29.86	5.75	29	0.344	1
5180-5240	29.41	6.62	29	0.379	1
5260-5320	23.68	6.56	29	0.100	1
5500-5700	23.67	6.51	29	0.099	1
5745-5825	29.45	6.70	29	0.390	1
Beamforming Mode					
2412-2462	29.64	5.75	29	0.327	1
5180-5240	29.32	6.62	29	0.372	1
5260-5320	23.42	6.56	29	0.094	1
5500-5700	23.47	6.51	29	0.094	1
5745-5825	29.45	6.70	29	0.390	1
BT LE					
2402-2480	7.15	1.50	29	0.001	1

Note:

2.4GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/2]$= 5.75dBi

5.0GHz:

For U-NII-1: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/2]$= 6.62dBi

For U-NII-2A: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/2]$= 6.56dBi

For U-NII-2C: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/2]$= 6.51dBi

For U-NII-3: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2/2]$= 6.70dBi

Frequency Band	Max Power (dBm)		Total Power (dBm)	Power Limit (dBm)
	WLAN	BT LE		
2.4GHz	29.86	7.15	29.88	30

Conclusion:
The formula of calculated the MPE is:
CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1
CPD = Calculation power density
LPD = Limit of power density

The simultaneous operation mode was determined by client.

No	Mode
1	WLAN 2.4GHz + WLAN 5GHz B2
2	WLAN 2.4GHz + WLAN 5GHz B3
3	BT + WLAN 5GHz B2
4	BT + WLAN 5GHz B3
5	WLAN 5GHz B2 + WLAN 5GHz B3
6	WLAN 5GHz B2 + WLAN 5GHz B4
7	WLAN 5GHz B1 + WLAN 5GHz B3
8	WLAN 2.4GHz + WLAN 5GHz B2 + WLAN 5GHz B4
9	WLAN 2.4GHz + WLAN 5GHz B1 + WLAN 5GHz B3
10	WLAN 2.4GHz + WLAN 5GHz B2 + WLAN 5GHz B3
11	BT + WLAN 5GHz B2 + WLAN 5GHz B4
12	BT + WLAN 5GHz B1 + WLAN 5GHz B3
13	BT + WLAN 5GHz B2 + WLAN 5GHz B3

1. WLAN 2.4GHz + WLAN 5GHz B2 = 0.344 + 0.099 = 0.443
2. WLAN 2.4GHz + WLAN 5GHz B3 = 0.344 + 0.099 = 0.443
3. BT + WLAN 5GHz B2 = 0.001 + 0.100 = 0.101
4. BT + WLAN 5GHz B3 = 0.001 + 0.099 = 0.100
5. WLAN 5GHz B2 + WLAN 5GHz B3 = 0.100 + 0.099 = 0.199
6. WLAN 5GHz B2 + WLAN 5GHz B4 = 0.100 + 0.390 = 0.490
7. WLAN 5GHz B1 + WLAN 5GHz B3 = 0.379 + 0.099 = 0.478
8. WLAN 2.4GHz + WLAN 5GHz B2 + WLAN 5GHz B4 = 0.344 + 0.100 + 0.390 = 0.834
9. WLAN 2.4GHz + WLAN 5GHz B1 + WLAN 5GHz B3 = 0.344 + 0.379 + 0.099 = 0.822
10. WLAN 2.4GHz + WLAN 5GHz B2 + WLAN 5GHz B3 = 0.344 + 0.100 + 0.099 = 0.543
11. BT + WLAN 5GHz B2 + WLAN 5GHz B4 = 0.001 + 0.100 + 0.390 = 0.491
12. BT + WLAN 5GHz B1 + WLAN 5GHz B3 = 0.001 + 0.379 + 0.099 = 0.479
13. BT + WLAN 5GHz B2 + WLAN 5GHz B3 = 0.001 + 0.100 + 0.099 = 0.200

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

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