RF Exposure Report

Report No.:	SA191030C05
FCC ID:	PY319400468
Contains FCC ID:	XMR202002EG18NA
Test Model:	LBR20
Received Date:	Oct. 30, 2019
Test Date:	Feb. 12 ~ Mar. 13, 2020
Issued Date:	Apr. 17, 2020
Applicant:	NETGEAR, INC.
Address:	350 East Plumeria Drive San Jose, CA 95134
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
SA191030C05	Original release.	Apr. 17, 2020

1 Certificate of Conformity

Product:	ORBI LTE Router LBR20
Brand:	NETGEAR
Test Model:	LBR20
Sample Status:	Engineering Sample
Applicant:	NETGEAR, INC.
Date of Evaluation:	Feb. 12 ~ Mar. 13, 2020
Standards:	FCC Part 2 (Section 2.1091)
References Test Guidance:	KDB 447498 D01 General RF Exposure Guidance v06 IEEE C95.3 -2002

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 RF characteristics under the conditions specified in this report.

Prepared by : Polly Chien / Specialist , **Date:** Apr. 17, 2020

Approved by : Bruce Chen / Senior Project Engineer , **Date:** Apr. 17, 2020

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				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	…	…	f/1500	30
1500-100,000	…	…	1.0	30

f = Frequency in MHz; *Plane-wave equivalent power density

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 20cm 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)	Output Power EIRP (dBm)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WCDMA Band 2	24.3	20	0.054	1
WCDMA Band 4	24.9	20	0.061	1
LTE Band 2	24.5	20	0.056	1
LTE Band 4	25.2	20	0.066	1
LTE Band 7	24.7	20	0.059	1
LTE Band 25	24.6	20	0.057	1
LTE Band 30	22.9	20	0.039	1
LTE Band 41	24.5	20	0.056	1
LTE Band 66	24.7	20	0.059	1
LTE Band 7C	25.5	20	0.071	1
LTE Band 41C	25.4	20	0.069	1

Frequency Band (MHz)	ERP (dBm)	EIRP (dBm)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WCDMA Band 5	20.4	22.55	20	0.036	0.55
LTE Band 5	20.4	22.55	20	0.036	0.55
LTE Band 26 (Part 22)	20.8	22.95	20	0.039	0.55
LTE Band 12	21.0	23.15	20	0.041	0.47
LTE Band 13	20.6	22.75	20	0.037	0.52
LTE Band 14	20.6	22.75	20	0.037	0.53
LTE Band 25	24.6	26.75	20	0.094	1
LTE Band 26 (Part 90)	21.3	23.45	20	0.044	0.54

EIRP = ERP + 2.15dB

Frequency Band (MHz)	Max. AV Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
CDD mode:					
2412-2462	24.96	4.33	20	0.169	1
5180-5240	23.40	6.38	20	0.189	1
5745-5825	27.72	5.82	20	0.449	1
Beamforming Mode					
2412-2462	24.29	4.33	20	0.145	1
5180-5240	23.32	6.38	20	0.186	1
5745-5825	27.72	5.82	20	0.449	1

Note:
1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. 2.4GHz & 5GHz & WWAN technology can transmit at same time.

For antenna gain:
WLAN:

Ant. Type	Dipole		
Connector	i-pex(MHF)		
Band	2.4GHz	5GHz Band 1	5GHz Band 4
Directional Gain (dBi)	4.33	6.38	5.82

WWAN:

Ant. Type	Ant 1 & Ant 2: Monopole Ant 5 & Ant 6: PCB			
Connector	Ant 1 & Ant 2: I-Pex Ant 5 & Ant 6: I-Pex			
Function	Frequency (MHz)	Antenna Gain (dBi)		
		Ant 1 (TX/RX)	Ant 2 (RX)	Ant 5 (RX)	Ant 6 (RX)
WCDMA Band 2	1850~1910	1.8	2.7	N/A	N/A
WCDMA Band 4	1710~1755	1.6	1.6	N/A	N/A
WCDMA Band 5	824~849	5.8	6.2	N/A	N/A
LTE Band 2	1850~1910	1.8	2.7	1.6	2.4
LTE Band 4	1710~1755	1.6	1.6	2.5	0.5
LTE Band 5	824~849	5.8	6.2	N/A	N/A
LTE Band 7	2500~2570	3.3	2.4	2.5	2
LTE Band 12	698~716	4.5	4.5	N/A	N/A
LTE Band 13	777~787	6.5	6.8	N/A	N/A
LTE Band 14	788~798	6.8	7.1	N/A	N/A
LTE Band 25	1850 ~1915	1.6	2.3	2.2	2.8
LTE Band 26	814 ~849	6	6.4	N/A	N/A
LTE Band 30	2305 ~2315	3.4	1.4	N/A	N/A
LTE Band 41	2496~2690	3.8	1.8	N/A	N/A
LTE Band 66	1710 ~1780	1.3	2	2.6	0.8

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WWAN + WLAN 2.4GHz+WLAN 5GHz = 0.094/1 + 0.169/1 + 0.449/1 =0.712

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

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