RF Exposure Report

Report No.:	SA191224E03
FCC ID:	Q87-08205
Test Model:	E5600
Received Date:	Dec. 24, 2019
Test Date:	Feb. 26, 2020
Issued Date:	Apr. 16, 2020
Applicant:	Linksys LLC
Address:	121 Theory Drive Irvine California 92617 United States
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SA191224E03	Original release.	Apr. 16, 2020

1 Certificate of Conformity

Product:	AC1200 DUAL-BAND GIGABIT WiFi 5 ROUTER
Brand:	Linksys
Test Model:	E5600
Sample Status:	ENGINEERING SAMPLE
Applicant:	Linksys LLC
Test Date:	Feb. 26, 2020
Standards:	FCC Part 2 (Section 2.1091) IEEE C95.3-2002
References Test Guidance:	KDB 447498 D01 General RF Exposure Guidance v06

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 : Joyce Kuo , **Date:** Apr. 16, 2020

Joyce Kuo / Specialist

Approved by : , **Date:** Apr. 16, 2020

Clark Lin / Technical 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				
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 35 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna NO.	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type	Cable Length(mm)	Cable Loss(dB)	excluding cable loss Antenna Gain(dBi)
G_ANT1	2.56	2.4~2.4835GHz	PIFA	none	NA	NA	2.56
G_ANT2	3.25	2.4~2.4835GHz	Dipole	i-pex(MHF)	75	0.3	3.55
A_ANT1	3.02	5.15~5.25GHz	Monopole	none	NA	NA	3.02
	3.29	5.25~5.35GHz				NA	3.29
	3.15	5.47~5.725GHz				NA	3.15
	3.27	5.725~5.85GHz				NA	3.27
A_ANT2	3.97	5.15~5.25GHz	Dipole	i-pex(MHF)	175	0.6	4.57
	4.29	5.25~5.35GHz				0.6	4.89
	4.35	5.47~5.725GHz				0.6	4.95
	4.35	5.725~5.85GHz				0.6	4.95

2.5 Calculation Result

Operation Mode	Evaluation Frequency (MHz)	Max Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN 2.4GHz	2437	359.29	5.92	35	0.09122	1
WLAN 5GHz U-NII-1	5200	226.417	6.52	35	0.066	1
WLAN 5GHz U-NII-3	5745	221.012	6.84	35	0.06935	1

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. 2.4GHz: The directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 5.92dBi$
3. 5GHz: For U-NII-1: The directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 6.52dBi$ i
   For U-NII-3: The directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 6.84dBi$

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz = 0.09122 / 1 + 0.06935 / 1 = 0.16057

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

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