RF Exposure Report

Report No.:	SA171208E04
FCC ID:	Q87-08011
Test Model:	WHW03 V2
Series Model:	A03 V2
Received Date:	Dec. 08, 2017
Test Date:	Feb. 05, 2018
Issued Date:	Feb. 13, 2018
Applicant:	Linksys LLC
Address:	121 Theory Drive, Irvine, CA 92617, USA
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 R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SA171208E04	Original release.	Feb. 13, 2018

1 Certificate of Conformity

Product:	WHOLE HOME WI-FI
Brand:	Linksys
Test Model:	WHW03 V2
Series Model:	A03 V2
Sample Status:	ENGINEERING SAMPLE
Applicant:	Linksys LLC
Test Date:	Feb. 05, 2018
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. 13, 2018

Wendy Wu / Specialist

Approved by : _____ , **Date:** Feb. 13, 2018

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				
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 32cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Bluetooth						
Ant No.	Brand	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type
1	Aristotle	RFA-BT-9267	1.69	2.4~2.4835	Dipole	i-pex(MHF)
Zigbee						
Ant No.	Brand	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type
1	Aristotle	RFA-ZB-9267	0.85	2.4~2.4835	Dipole	i-pex(MHF)
WLAN						
Ant No.	Brand	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type
1	Aristotle	RFA-05-9267-L	3.55	5.5~5.825	Dipole	i-pex(MHF)
2	Aristotle	RFA-05-9267-R	3.87	5.5~5.825	Dipole	i-pex(MHF)
3	Aristotle	RFA-25-9267-B-V2	3.12	2.4~2.4835	Dipole	i-pex(MHF)
			3.77	5.18~5.320		
4	Aristotle	RFA-25-9267-F-V2	3.26	2.4~2.4835	Dipole	i-pex(MHF)
			3.68	5.18~5.320		

2.5 Calculation Result of Maximum Conducted Power

WLAN:

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	813.837	6.20	32	0.26365	1
5180-5240	729.665	6.74	32	0.26768	1
5745-5825	993.777	6.72	32	0.36289	1

NOTE:
2.4GHz: Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.20dBi
5GHz:
UNII-1: Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.74dBi
UNII-3: Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.72dBi

BT-EDR

Frequency Band (MHz)	Max. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2402-2480	5.200	1.69	32	0.00060	1

BT-LE

Frequency Band (MHz)	Max. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2402-2480	8.241	1.69	32	0.00095	1

Zigbee

Frequency Band (MHz)	Max. Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2405-2475	66.069	0.85	32	0.00624	1

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 (UNII-1) + WLAN 5GHz (UNII-3) + Bluetooth + Zigbee = 0.26365 / 1 + 0.26768 / 1 + 0.36289 / 1 + 0.00095 / 1 + 0.00624 / 1 = 0.90141
Therefore the maximum calculations of above situations are less than the "1" limit.

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