

RF Exposure Report

Report No.: SA180627E05A

FCC ID: Q87-03367

Test Model: WHW01P

Series Model: VLP01P, A01P

Received Date: June 27, 2018

Test Date: July 19, 2018

Issued Date: Sep. 06, 2018

Applicant: Linksys LLC

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

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Taiwan R.O.C.

Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.

**FCC Registration /
Designation Number:** 723255 / TW2022

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Report Issue History Record

Issue No.	Reason for Change	Date Issued
SA180627E05	Original.	Aug. 23, 2018
SA180627E05A	Add DFS band <5.26 ~ 5.32GHz, 5.5 ~ 5.72GHz>	Sep. 06, 2018

Release Control Record

Issue No.	Description	Date Issued
SA180627E05A	Original release.	Sep. 06, 2018

1 Certificate of Conformity

Product: Velop Plug-In

Brand: Linksys

Test Model: WHW01P

Series Model: VLP01P, A01P

Sample Status: ENGINEERING SAMPLE

Applicant: Linksys LLC

Test Date: July 19, 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 :

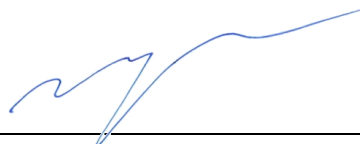


Date:

Sep. 06, 2018

Wendy Wu / Specialist

Approved by :



Date:

Sep. 06, 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/cm²

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**.

2.4 Antenna Gain

WLAN						
Ant. No.	Chain No.	Ant. Net Gain (dBi)	Freq. range (GHz)	Ant. Type	Connector Type	Cable Length (mm)
1 (Left)	Chain 0	2.41	2.4~2.4835	Dipole	U.FL	53
		3.15	5.15~5.85			
2 (Right)	Chain 1	3.2	2.4~2.4835	Dipole	U.FL	77
		3.9	5.15~5.85			
Bluetooth						
Ant. No.	Ant. Net Gain (dBi)		Freq. range (GHz)	Ant. Type	Connector Type	Cable Length (mm)
3	2.13		2.402~2.480	IFA	U.FL	53

2.5 Calculation Result

For 2.4GHz, 5GHz (U-NII-1 & UNII-3 band) and Bluetooth data was copied from the original test report (Report No.: SA180627E05)

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN 2.4GHz	2437	526.359	5.82	20	0.39996	1
WLAN 5GHz (UNII-1)	5200	403.327	6.54	20	0.36173	1
WLAN 5GHz (UNII-2A)	5270	230.481	6.54	20	0.20671	1
WLAN 5GHz (UNII-2C)	5580	219.085	6.54	20	0.19649	1
WLAN 5GHz (UNII-3)	5795	520.715	6.54	20	0.46701	1
BT-EDR	2480	5.508	2.13	20	0.00179	1
BT-LE	2480	7.852	2.13	20	0.00255	1

Note:

2.4GHz: Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 5.82\text{dBi}$

5GHz: Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 6.54\text{dBi}$

Conclusion:

The formula of calculated the MPE is:

$\text{CPD1} / \text{LPD1} + \text{CPD2} / \text{LPD2} + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

$\text{WLAN 2.4GHz} + \text{WLAN 5GHz} + \text{Bluetooth} = 0.39996 / 1 + 0.46701 / 1 + 0.00255 / 1 = 0.86952$

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

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