

## 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

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
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 :** Wendy Wu , **Date:** Sep. 06, 2018  
Wendy Wu / Specialist

**Approved by :** May Chen , **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 <sup>2</sup> )	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 <sup>2</sup> )*	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<sup>2</sup>

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	Connecter 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	Connecter 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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
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:

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

CPD = Calculation power density

LPD = Limit of power density

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

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

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