



RADIO EXPOSURE TEST REPORT

FCC ID : 2AYRA-100014
Equipment : Linksys Velop Micro Mesh 7
Brand Name : Linksys
Model Name : LN1600, SPNLN16, LN16
Applicant : Linksys USA, Inc.
121 Theory, Irvine, CA. 92617, USA
Standard : 47 CFR Part 2.1091

The product was received on Oct. 01, 2024, and testing was started from Oct. 01, 2024 and completed on May 29, 2025. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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Photographs of EUT v01



TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A1_1 Ver1.1



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sam Chen

Report Producer: Muse Chan



1 General Description

1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5250 5250-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be/ EHT240: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)
Bluetooth	2400-2483.5	2402-2480	LE: GFSK



1.2 Antenna Information

Ant.	Port			Brand	Model Name	Antenna Type	Connector	Gain (dBi)
	WLAN 2.4GHz	WLAN 5GHz	Bluetooth					
1	1	1	-	GALTRONICS	02102140-08091C1	PCB Antenna	U.FL	Note 1
2	2	2	-	GALTRONICS	02102140-08091C2	PCB Antenna	U.FL	
3	-	-	1	GALTRONICS	02036073-07315	Embedded Antenna	N/A	

Note 1:

Ant.	Antenna Gain (dBi)				
	WLAN 2.4GHz	WLAN 5GHz			
		Band 1	Band 2	Band 3	Band 4
1	2.19	3.40	3.45	3.70	3.40
2	1.56	3.21	3.15	3.41	3.20
Ant.	Bluetooth				
3	3.53				

Note 2: The above information was declared by manufacturer.

Note 3: Directional gain information

Type	Maximum Output Power	Power Spectral Density
Non-BF	Directional gain = Max.gain + array gain. For power measurements on IEEE 802.11 devices Array Gain = 0 dB (i.e., no array gain) for N ANT ≤ 4	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left[\sum_{k=1}^{N_{ANT}} g_{j,k} \right]^2}{N_{ANT}} \right]$
BF	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left[\sum_{k=1}^{N_{ANT}} g_{j,k} \right]^2}{N_{ANT}} \right]$	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left[\sum_{k=1}^{N_{ANT}} g_{j,k} \right]^2}{N_{ANT}} \right]$

Ex.

Directional Gain (NSS1) formula :

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{ANT}} \left[\sum_{k=1}^{N_{ANT}} g_{j,k} \right]^2}{N_{ANT}} \right]$$

$$NSS1(g1,1) = 10^{G1/20} ; NSS1(g1,2) = 10^{G2/20} ; NSS1(g1,3) = 10^{G3/20} ; NSS1(g1,4) = 10^{G4/20}$$

$$g_{j,k} = (NSS1(g1,1) + NSS1(g1,2) + NSS1(g1,3) + NSS1(g1,4))^2$$

$$DG = 10 \log[(NSS1(g1,1) + NSS1(g1,2) + NSS1(g1,3) + NSS1(g1,4))^2 / N_{ANT}] \Rightarrow 10$$

$$\log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / N_{ANT}]$$

Where ;

$$2.4G \ G1 = 2.19 \text{ dBi} ; G2 = 1.56 \text{ dBi}$$

$$5G \text{ UNII-1} \ G1 = 3.40 \text{ dBi} ; G2 = 3.21 \text{ dBi} ;$$

$$5G \text{ UNII-2A} \ G1 = 3.45 \text{ dBi} ; G2 = 3.15 \text{ dBi} ;$$

$$5G \text{ UNII-2C} \ G1 = 3.70 \text{ dBi} ; G2 = 3.41 \text{ dBi} ;$$

$$5G \text{ UNII-3} \ G1 = 3.40 \text{ dBi} ; G2 = 3.20 \text{ dBi} ;$$

$$2.4G \ DG = 4.89$$

$$5G \text{ UNII-1} \ DG = 6.32$$

$$5G \text{ UNII-2A} \ DG = 6.31$$

$$5G \text{ UNII-2C} \ DG = 6.57$$

$$5G \text{ UNII-3} \ DG = 6.31$$

Note 4: For 2.4GHz function:

For IEEE 802.11b/g/n/VHT/ax/be (2TX/2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11a/n/ac/ax/be (2TX/2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

For Bluetooth function (1TX/1RX):

Only Port 1 can be used as transmitting/receiving antenna.



1.3 Table for EUT Supports Function

Function
AP Router
Mesh

Note: The above information was declared by manufacturer.

1.4 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
LN1600	All the models are identical; the different model names served as marketing strategy.
SPNLN16	
LN16	

Note 1: From the above models, model: LN1600 was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.

1.5 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter 1	Ktec	KSA-35P-D5X	Input: 100-240V ~ 50/60Hz, 1.0A Output: 5.0V, 3.0A, 15.0W 9.0V, 3.0A, 27.0W
Adapter 2	Frecom	FC035P04-050030CP	Input: 100-240V~50/60Hz, 1.0A Output: 5.0V, 3.0A, 15.0W; 9.0V, 3.0A, 27.0W; 12.0V, 2.91A, 34.92W; 15.0V, 2.33A, 34.95W; 20.0V, 1.75A, 35.0W
Others			
Plug 1 (For Adapter 1 use only)*1			
Plug 2 (For Adapter 2 use only)*1			
RJ-45 cable*1: Non-shielded, 0.9m			
USB Type-C cable 1 (For Adapter 1 use only)*1: Shielded, 1.5m			
USB Type-C cable 2 (For Adapter 2 use only)*1: Shielded, 1.5m			



1.6 Testing Location

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085
	Test site Designation No. TW3787 with FCC.
	Conformity Assessment Body Identifier (CABID) TW3787 with ISED.



2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	*(100)	<6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1500	-	-	f/300	<6
1500-100,000	-	-	5	<6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Method

The MPE was calculated at 35 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;BT-LE	3.53	9.48	13.01	0.50	13.51	0.02244	35	0.00146	1.00000	0.00146
2.4G;D1D	4.89	26.66	31.55	0.50	32.05	1.60325	35	0.10415	1.00000	0.10415
5.2G;D1D	6.32	28.49	34.81	0.50	35.31	3.39625	35	0.22062	1.00000	0.22062
5.3G;D1D	6.31	23.64	29.95	0.50	30.45	1.10917	35	0.07205	1.00000	0.07205
5.6G;D1D	6.57	23.39	29.96	0.50	30.46	1.11173	35	0.07222	1.00000	0.07222
5.8G;D1D	6.31	29.56	35.87	0.12	35.99	3.97192	35	0.25801	1.00000	0.25801

Simultaneous Transmission Analysis Mode: Bluetooth + WLAN 2.4GHz + WLAN 5GHz

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;BT-LE	3.53	9.48	13.01	0.50	13.51	0.02244	35	0.00146	1.00000	0.00146
2.4G;G1D	4.89	26.66	31.55	0.50	32.05	1.60325	35	0.10415	1.00000	0.10415
5.8G;D1D	6.31	29.56	35.87	0.12	35.99	3.97192	35	0.25801	1.00000	0.25801
Sum Ratio	0.36362									
Ratio Limit	1									

—————THE END—————