RF EXPOSURE REPORT

CERTIFICATE OF CONFORMITY

FCC Rule Part:	**FCC Part 2 (Section 2.1091)** **FCC Part 2 (Section 2.1093)**
Report No.:	MFBENL-WTW-P22070089
FCC ID:	RYK-WPEQ262ACNIBT
Model No.:	WPEQ-262ACNI(BT)
Received Date:	2022/7/5
Test Date:	2022/7/28 ~ 2022/9/7
Issued Date:	2022/10/11
Applicant:	SparkLAN Communications, Inc.
Address:	5F, No. 199, Ruihu St., Neihu Dist., Taipei City 114067, Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Approved by: Jeremy Lin , **Date:** 2022/10/11

Jeremy Lin / Project Engineer

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Prepared by : Lena Wang / Specialist

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
MFBENL-WTW-P22070089	Original Release	2022/10/11

1 Certificate

Product:	802.11ac/b/g/n Wi-Fi+BT Module
Brand:	SparkLAN
Test Model:	WPEQ-262ACNI(BT)
Sample Status:	Mass product
Applicant:	SparkLAN Communications, Inc.
Test Date:	2022/7/28 ~ 2022/9/7
FCC Rule Part:	FCC Part 2 (Section 2.1091) FCC Part 2 (Section 2.1093)
Standard:	KDB 447498 D04 Interim General RF Exposure Guidance v01

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 RF characteristics under the conditions specified in this report.

2 Applicable RF Exposure Limit

§ 1.1310 Radiofrequency radiation exposure limits.

(a) Specific absorption rate (SAR) shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in § 1.1307(b) of this part within the frequency range of 100 kHz to 6 GHz (inclusive).
(b) The SAR limits for occupational/controlled exposure are 0.4 W/kg, as averaged over the whole body, and a peak spatialaverage SAR of 8 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit for occupational/controlled exposure is 20 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 6 minutes to determine compliance with occupational/controlled SAR limits.
(c) The SAR limits for general population/uncontrolled exposure are 0.08 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 1.6 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit is 4 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 30 minutes to determine compliance with general population/uncontrolled SAR limits.

(e) Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields

- Limits for General Population/Uncontrolled Exposure

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.

- Limits for Occupational/Controlled Exposure

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				
0.3-3.0	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
300-1,500			f/300	<6
1,500-100,000			5	<6

f = frequency in MHz. * = Plane-wave equivalent power density.

3 Applicable Evaluation Criteria

Exemption Evaluation

MPE-based Exemption – §1.1307(b)(3)(i)(C)

- The minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power.
- Table applies to any RF source (i.e. single fixed, mobile, and portable transmitters) and specifies power and distance criteria for each of the five frequency ranges used for the MPE limits.

RF Source frequency (MHz)	Minimum Distance		Threshold ERP (watts)
	$\lambda_L/2\pi$	$\lambda_H/2\pi$	
0.3-1.34	159 m–35.6 m		1,920 R^2.
1.34-30	35.6 m–1.6 m		3,450 R^2/f^2.
30-300	1.6 m–159 mm		3.83 R^2.
300-1,500	159 mm–31.8 mm		0.0128 R^2f.
1,500-100,000	31.8 mm–0.5 mm		19.2 R^2.
R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters.			

4 Test Results

4.1 RF Exposure

Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

MPE-based Exemption §1.1307(b)(3)(i)(C)							
Operation Mode	Frequency Band (MHz)	Average Power (mW)	Antenna Gain (dBi)	Maximum ERP (mW)	Distance (cm)	Limit Threshold (mW)	Test Result
CDD Mode							
Bluetooth	2402-2480	6.607	1.5	5.689	20	768	Pass
WLAN 2.4GHz	2412-2462	127.567	1.5	109.834	20	768	Pass
WLAN 5GHz	5180-5825	191.905	2	185.39	20	768	Pass
Beamforming Mode							
WLAN 2.4GHz	2412-2462	54.191	4.51	93.31	20	768	Pass
WLAN 5GHz	5180-5825	83.392	5.01	161.111	20	768	Pass

Note:

1. This report is prepared for FCC class II permissive change.This report is issued as a supplementary report to BV CPS report no. SA190625C32. The difference compared with original report is adding antenna and reducing the power. Therefore, the EUT is re-calculated MPE value
2. 2.4GHz & 5GHz technologies cannot transmit at same time.
3. WLAN & BT technologies cannot transmit at same time.
4. The antenna information is listed as below. (Antenna 5 is new)

No.	Transmitter Circuit	Brand	Model	Antenna Type	2.4G gain with cable loss (dBi)	5G gain with cable loss (dBi)	Connector Type
1	Chain(0) Chain(1)	Sparklan	AD-300N	Dipole	3	5	RP-SMA
2	Chain(0) Chain(1)	Sparklan	AD-103AG	Dipole	2.02	2.03	RP-SMA
3	Chain(0) Chain(1)	Sparklan	AD-302N	Dipole	3	2	RP-SMA
4	Chain(0) Chain(1)	Sparklan	AD-303N	Dipole	3	3	RP-SMA
5	-	Taolas	MA230.LBC.002	PIFA	1.5	2	RP-SMA

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

5. 2.4GHz: Directional gain = 1.5dBi + 10log(2) = 4.51dBi
6. 5.0GHz: Directional gain = 2dBi + 10log(2) = 5.01dBi
7. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

5 Conclusion

Source-base time average power is below Exemption Criteria and/or Routine Evaluation MPE thresholds, therefore the device is compliant FCC RF exposure requirement.

6 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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