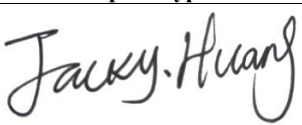
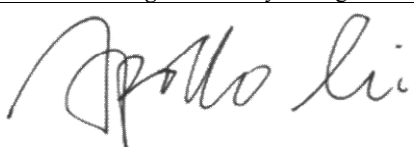


RF Exposure Evaluation Report

Under :
47 CFR Part 2.1091
KDB447498 D01 General RF Exposure Guidance v06

Prepared For :
Appion Incorporated
2800 South Tejon Street Englewood, CO 80110

FCC ID: 2ABH9-LR2188
EUT: LR2188
Model: LR2188, LR2188-uFL

July 19, 2019 Issue Date:
Original Report Report Type:
 Test Engineer: Jacky Huang
 Review By: Apollo Liu / Manager

The test report consists 7 pages in total. It may be duplicated completely for legal use with the allowance of the applicant. It shall not be reproduced except in full, without the written approval of Ke Mei Ou Laboratory Corporation. The test result in the report only applied to the tested sample.

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Report Revision History

Report #	Version	Description	Issued Date
KSZ2019031301J03	Rev.01	Initial issue of report	May 10, 2019
KSZ2019031301J03	Rev.02	Update section 1.6 & 4.3 of report	July 19, 2019

1. General Information

1.1 Notes

The test results of this report relate exclusively to the test item specified in 1.5. The KMO Lab does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the KMO Lab.

1.2 Testing Laboratory

Test Firm Name:	Ke Mei Ou Lab Co., Ltd.
Test Firm Address:	2013-2016, 20th Floor, Business Center, Jiahui Xin Cheng, No 3027, Shen Nan Road, Fu Tian, Shen Zhen, Guang Dong, P. R. China
FCC Designation Number:	CN1532
Test Firm Registration Number:	344480
Internet:	www.kmolab.com
Email:	kmo@kmolab.com
ANSI-ASQ National Accreditation Board/ACLASS ISO/IEC 17025 Accredited Lab for telecommunication standards. The Registration Number is AT-1532. The testing quality system meets with ISO/IEC-17025 requirements, This approval results is accepted by MRA of ILAC.	

1.3 Detail. 3 Details of Applicant

Name: Appion Incorporated
Address: 2800 South Tejon Street Englewood, CO 80110

1.4 Application Details

Date of Receipt of Application : December 12, 2018
Date of Receipt of Test Item : March 25, 2019
Date of Test : March 25~May 10, 2019

1.5 Details of Manufacturer

Name: Appion Incorporated
Address: 2800 South Tejon Street Englewood, CO 80110

1.6 Test Item

EUT Feature	
EUT Description:	LR2188
Brand Name:	Nordic Semiconductor
Model Name:	LR2188, LR2188-uFL
EUT RF Technology:	☐ Bluetooth v3.0 + EDR ☐ Bluetooth v4.0 LE ☒ Bluetooth v4.2 LE ☐ Bluetooth v5.0 LE ☐ WLAN 2.4GHz 802.11b/g/n HT/20/40 ☐ WLAN 5GHz 802.11a/n HT20/HT40 ☐ WLAN 5GHz 802.11ac VHT20/VHT40/VHT80
HW Version:	
SW Version:	
EUT Stage:	Identical Prototype
Note: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	

Additional Information

Standard Product Specification				
Tx/Rx Frequency Range	2402~2480 MHz			
Number of Channels	40 (37 hopping + 3 advertising channel)			
Carrier Frequency of Each Channel	f=2402+k MHz (k=0,2,4,...,39)			
Antenna Type / Gain	Chain Number	Antenna Gain	Internal	External
	0	1.3dBi	☒ Chip ☐ PIFA	☐ Dipole ☐ Whip
	0	4.9dBi	☐ Chip ☐ PIFA	☒ Dipole ☐ Whip
	0	3.0dBi	☐ Chip ☐ PIFA	☐ Dipole ☒ Whip
Type of Modulation	Bluetooth LE : GFSK			
EUT Operational Condition	☐ AC			
	☒ DC → ☐ From Battery ☐ External AC adapter ☐ POE			
	☒ DC Power 3.3Vdc			

1.7 Applicable Standards

Applicable Standards
According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards: 47 CFR Part 2.1091 KDB447498 D01 General RF Exposure Guidance v06
Note: All test items were verified and recorded according to the standards and without any deviation during the test.

2. Technical Test

2.1 Summary of Test Results

The EUT has been tested according to the following specifications:

FCC Rules	Test Type	Limit	Result	Notes
47 CFR Part 2.1091	Exposure Evaluation	< 1.0m W/cm ²	PASS	Complies.

3. EUT Modifications

No modification by test lab.

4. FCC Maximum Permissible Exposure (MPE)

4.1 Limit of MPE

(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

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

4.2 RF Exposure Requirements

RF Exposure Requirements
$S = PG / 4\pi R^2$ Where: S=Power density P=Power input to antenna G=Power gain of the antenna relative to an isotropic radiator R=Distance to the center of radiation of the antenna

4.3 Conclusion

Compliance with FCC Rules					
Mode/Band	Maximum Antenna gain (dBi)	Maximum tune-up Conducted Power (dBm)	Evaluation Distance(cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
2402~2480MHz CH39_ 2480MHz	4.9	-1.45	20	0.00044	1.0

-----End of Report -----