RF Exposure Report

Report No.:	SA180329C04
FCC ID:	WS2-WS2119A0
Test Model:	WS2119-A0
Series Model:	WS2119-F0
Received Date:	Mar. 29, 2018
Date of Evaluation:	Jun. 07, 2018
Issued Date:	Jun. 21, 2018
Applicant:	JORJIN TECHNOLOGIES INC.
Address:	17F, No.239, Sec. 1, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
Test Location:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
SA180329C04	Original Release	Jun. 21, 2018

1 Certificate of Conformity

Product:	BLE and Sigfox wireless module
Brand:	Jorjin
Test Model:	WS2119-A0
Series Model:	WS2119-F0
Sample Status:	Engineering Sample
Applicant:	JORJIN TECHNOLOGIES INC.
Date of Evaluation:	Jun. 07, 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 : Evonne Liu , **Date:** Jun. 21, 2018

Evonne Liu / Specialist

Approved by : , **Date:** Jun. 21, 2018

Dylan Chiou / Project Engineer

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/cm^2

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

Mode	Ant. Type	Brand	Model	Antenna Gain
Bluetooth LE	PCB	Unictron	H2B1BC2A1B0200	3.58
	PCB	Unictron	H2B1BE1A1B0200	**4.13**
	Dipole	WIESON	GPOT155-002	2.61
Sigfox	Dipole	SANAV	EEN-107	**3.53**
	PCB	Unictron	H2B1SD1A2C0100	1.9
	PCB	Unictron	H2B1SG2A2C0100	1.8

2.5 Calculation Result of Maximum Conducted Power

Band	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
Sigfox	902.1375-904.6625	25.29	3.53	20	0.152	0.60
BT LE	2402-2480	8.66	4.13	20	0.004	1.00

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Sigfox + BT LE = 0.152 + 0.004 = 0.156

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

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