

RF Exposure Report

Report No.: SA190705C07

FCC ID: WS2-WS2116A0

Test Model: WS2116-A0

Series Model: WS2116-F0

Received Date: Jul. 05, 2019

Date of Evaluation: Sep.18, 2019

Issued Date: Sep. 23, 2019

Applicant: JORJIN TECHNOLOGIES INC.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
SA190705C07	Original Release	Sep. 23, 2019

1 Certificate of Conformity

Product: BLE and Sigfox wireless module

Brand: Jorjin

Test Model: WS2116-A0

Series Model: WS2116-F0

Sample Status: Engineering Sample

Applicant: JORJIN TECHNOLOGIES INC.

Date of Evaluation: Sep.18, 2019

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.3 -2002

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.


Prepared by : _____, **Date:** Sep. 23, 2019
Lena Wang / Specialist


Approved by : _____, **Date:** Sep. 23, 2019
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

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 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)
BT LE	2402-2480	7.3	2.6	20	0.002	1.00
Sigfox	902.1375-904.6625	24.52	3.53	20	0.127	0.60

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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

$$BT LE + Sigfox = 0.002 / 1 + 0.127 / 0.60 = 0.214$$

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

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