RF Exposure Report

Report No.:	FCC_RF_SL19120201-STL-002_MPE Rev 1.0
	2AWMB-SX
FCC ID:	QIPPLS62-W
	N7NBX31A
Test Model:	Spider X
Series Model:	N/A
Issued Date:	09/01/2020
Applicant:	Spider Tracks Limited
Address:	Unit 205/150 Karangahape Road Auckland CBD, 1010, Auckland, New Zealand
Manufacturer:	Spider Tracks Limited
Address:	Unit 205/150 Karangahape Road Auckland CBD, 1010, Auckland, New Zealand
Issued By:	Bureau Veritas Consumer Products Services, Inc.
Lab Address:	775 Montague Expressway, Milpitas, CA 95035
Test Location (1):	775 Montague Expressway, Milpitas, CA 95035
FCC Registration / Designation Number:	540430

ACCREDITED
TESTING CERT # 2742-01

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Release Control Record

Issue No.	Description	Date Issued
FCC_RF_SL19120201-STL-002_MPE	Initial Release	05/20/2020
FCC_RF_SL19120201-STL-002_MPE Rev 1	Update FCC ID	09/01/2020

1 Certificate of Conformity

Product: Spidertracks

Brand: Spider

Test Model: Spider X

Sample Status: Engineering Sample

Applicant: Spider Tracks Limited

Standards: FCC Part 2 (Section 2.1093)
KDB 447498 D01 General RF Exposure Guidance v06
IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services, Inc., Milpitas 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 : _____ , **Date:** 05/20/2020
Deon Dai / Test Engineer

Approved by : _____ , **Date:** 05/20/2020
Chen Ge / Engineer Reviewer

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 40cm away from the body of the user. So, this device is classified as Mobile Device.

2.4 Calculation Result of Maximum Conducted Power

Type	Max Power (dBm)	Turn-Up Tolerance	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
BLE	4.49	±1dB	-1.65	40	0.0001	1
WLAN	20	±1dB	-1.65	40	0.0043	1
Satellite	31.7	±1dB	3	40	0.1849	1
GSM850	25.97	±1dB	5.15	40	0.0811	0.549
GSM1900	22.97	±1dB	2.15	40	0.0204	1
UMTS Band 2	25	±1dB	2.15	40	0.0325	1
UMTS Band 4	25	±1dB	2.15	40	0.0325	1
UMTS Band 5	25	±1dB	5.15	40	0.0648	0.549
LTE Band 2	25	±1dB	2.15	40	0.0325	1
LTE Band 4	25	±1dB	2.15	40	0.0325	1
LTE Band 5	25	±1dB	2.15	40	0.0325	0.549
LTE Band 7	25	±1dB	4.2	40	0.0521	1
LTE Band 12	25	±1dB	2	40	0.0314	0.477
LTE Band 18	25	±1dB	5.15	40	0.0648	0.543
LTE Band 19	25	±1dB	5.15	40	0.0648	0.553

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. Calculate MPE thresholds from condition “1” formulas.

3 Conclusion

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

Max Co-location mode = Satellite + GSM850 + WLAN = (0.1849 /1+ 0.0811/0.549 + 0.0043/1) = 0.337 < 1
Therefore the maximum calculations of above situations are less than the "1" limit.

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