

Northwest Instrument INC

MPE ASSESSMENT REPORT

Report Type:

FCC Part §2.1091, §2.1093 and §1.1307(b) assessment report

Model:

Carta

REPORT NUMBER:

190502535SHA-002

ISSUE DATE:

June 21, 2019

DOCUMENT CONTROL NUMBER:

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Report no.: 190502535SHA-002

Applicant: Northwest Instrument INC

69 King Street, Dover, NJ 07801, USA

Manufacturer: Northwest Instrument INC

69 King Street, Dover, NJ 07801, USA

Manufacturing Site: Rosenberger Technology (kunshan)Co., Ltd

No. 6, Shen'an Rd., Dianshanhu, Kunshan, Suzhou, Jiangsu, China, 215345

Product Name: Smart Wheel

Type/Model: Carta

FCC ID: 2ADA6CARTA

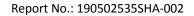
SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

KDB447498 D01 General RF Exposure Guidance v06 FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

PREPARED BY:	REVIEWED BY:	
Wade zhang	Donnel	
Project Engineer	Reviewer	
Wade Zhang	Daniel Zhao	

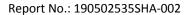
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Revision History

Report No.	Version	Description	Issued Date	
190502535SHA-002	Rev. 01	Initial issue of report	June 21, 2019	





TEST REPORT

1 GENERAL INFORMATION

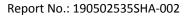
1.1 Description of Equipment Under Test (EUT)

Product name:	Smart Wheel
Type/Model:	Carta
Description of EUT:	The EUT is a smart wheel which was installed a Bluetooth low energy module, there have only one model.
Rating:	DC4.5V
Category of EUT:	Class B
EUT type:	☐ Table top ☐ Floor standing
Software Version:	/
Hardware Version:	/
Sample received date:	May 24, 2019
Date of test:	May 24, 2019 ~ June 21, 2019

1.2 Technical Specification

Frequency Range:	2400MHz ~ 2483.5MHz		
Support Standards:	Bluetooth 4.2 (BLE)		
Type of Modulation:	GFSK		
Channel Number:	40 (0-39)		
Data Rate:	1Mbps		
Power Class:	Class II		
Channel Separation:	2 MHz		

Antenna information:						
No.	Antenna Type	Gain (dBi)	Note			
1	Internal PCB antenna	3.3dBi	/			

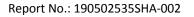




1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized,	CNAS Accreditation Lab Registration No. CNAS L0139
certified, or accredited by these	FCC Accredited Lab Designation Number: CN1175
organizations:	IC Registration Lab CAB identifier.: CN0051
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02





2 MPE Assessment

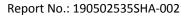
Test result: Pass

2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

Frequency range	E-field strength	H-field strength B-field		Equivalent plane wave	
	(V/m)	(A/m)	(uT)	power density	
				S_{eq} (W/m ²)	
0-1 Hz	-	3.2×10^4	4×10^{4}	-	
1-8 Hz	10 000	$3.2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-	
8-25 Hz	10 000	4 000/f	5 000/f	-	
0,025-0,8 kHz	250/f	4/f	5/f	-	
0,8-3 kHz	250/f	5	6,25	-	
3-150 kHz	87	5	6,25	-	
0,15-1 MHz	87	0,73/f	0,92/f	-	
1-10 MHz	87/f ^{1/2}	0,73/f	0,92/f	-	
10-400 MHz	28	0,073	0,092	2	
400-2 000 MHz	1,375 f ^{1/2}	0,0037 f ^{1/2}	0,0046 f ^{1/2}	f/200	
2-300 GHz	61	0,16	0,20	10	

Mobile device exposure for simultaneous transmission operations: the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is \leq 1.0





TEST REPORT

2.2 Assessment Results

Power density (S) is calculated according to the formula:

 $S = PG / (4\pi R^2)$

Where $S = power density in mW/cm^2$

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 190402511SHA-001:

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

Frequency band	Power		Antenna Gain		R	S	Limits
(MHz)	dBm	mW	dBi	(Numeric)	(cm)	(mW/cm²)	(mW/cm ²)
2402 - 2480	-0.08	0.98	3.3	2.14	20	0.0004	1

Note: 1 mW/cm² from 1.310 Table 1





Appendix I

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.

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