

# Northwest Instrument Inc. MPE ASSESSMENT REPORT

### **Report Type:**

FCC MPE assessment report

Model: NRL900HT-R, NRL900HT-G

**REPORT NUMBER:** 201101572SHA-002

ISSUE DATE: January 06, 2021

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TEST REPORT

Intertek Testing Services Shanghai Building No.86, 1198 Qinzhou Road (North) Caohejing Development Zone Shanghai 200233, China

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Report no.: 201101572SHA-002

Applicant:	Northwest Instrument Inc.		
	69 King Street, Dover, NJ 07801, USA		
Manufacturer:	Northwest Instrument (Shanghai) Co., Ltd. B2-B No.303, Xinke Road, Qingpu Industrial Zone, 201707 Shanghai, P.R. China		

FCC ID: 2ADA6NRL900HT

#### 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:

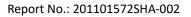
Gnick Lin

Project Engineer Erick Liu

**REVIEWED BY:** 

Reviewer Daniel Zhao

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# **Revision History**

Report No.	Version	Description	Issued Date	
201101572SHA-002	Rev. 01	Initial issue of report	January 06, 2021	

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## **1 GENERAL INFORMATION**

## **1.1** Description of Equipment Under Test (EUT)

Product name:	Smart Rotary Laser			
Type/Model:	NRL900HT-R, NRL900HT-G			
	The equipment under test (EUTs) are Smart Rotary Level which has BLE			
Description of EUT:	function, the two models have different PCBA at power supply. Both models were evaluated for radiation testing.			
Rating:	4.8V 9Ah rechargeable battery			
Category of EUT:	Class B			
EUT type:	🔀 Table top 🔲 Floor standing			
Software Version:	/			
Hardware Version:	/			
Sample received date:	November 16, 2020			
Date of test:	November 17, 2020 – December 25, 2020			



# **1.2 Technical Specification**

Frequency Range:	2402-2480MHz
Support Standards:	IEEE 802.15.1
Type of Modulation:	GFSK
Channel Number:	40
Channel Separation:	2MHz
Antenna Information:	PCB antenna, OdBi

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# **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 organizations:	FCC Accredited Lab Designation Number: CN1175
	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

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## 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 <sub>eq</sub> (W/m²)	
0-1 Hz	-	3,2 × 10 <sup>4</sup>	$4 \times 10^{4}$	-	
1-8 Hz	10 000	3,2 × 10 <sup>4</sup> /f <sup>2</sup>	$4 \times 10^4/f^2$	-	
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 <sup>1/2</sup>	0,73/f	0,92/f	-	
10-400 MHz	28	0,073	0,092	2	
400-2 000 MHz	1,375 f <sup>1/2</sup>	0,0037 f <sup>1/2</sup>	0,0046 f <sup>1/2</sup>	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

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## 2.2 Assessment Results

Power density (S) is calculated according to the formula:  $S = P / (4\pi R^2)$ Where S = power density in mW/cm<sup>2</sup> P = Radiated transmit power in mW G = numeric gain of transmit antennaR = distance (cm)

As we can see from the test report 201101572SHA-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.

Mode	Frequency band	Max Conducted Power	Antenna Gain	R	S	Limits
	(MHz)	dBm	dBi	(cm)	(mW/cm2)	(mW/cm2)
BLE	2400 -2483.5	-1.11	0	20	0.000154	1

The worst MPE = 0.000154 mW/cm2 < 1 mW/cm2.



## 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.