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Report No.: SZEM160800711003  
Page: 1 of 6

# SAR Evaluation Report

**Application No.:** SZEM1608007110CR  
**Applicant:** Shenzhen 3Nod Digital Technology Co., Ltd.  
**Manufacturer:** Shenzhen 3Nod Digital Technology Co., Ltd.  
**Factory:** Shenzhen 3Nod Digital Technology Co., Ltd.  
**Product Name:** SHADOW WIRELESS  
**Model No.(EUT):** SOL-EP1140  
**Trade Mark:** SOL REPUBLIC  
**FCC ID:** 2AA3H-SOLEP1140  
**Standards:** 47 CFR Part 1.1307 (2015)  
47 CFR Part 2.1093 (2015)  
KDB447498D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2016-08-23  
**Date of Test:** 2016-08-31 to 2016-09-03  
**Date of Issue:** 2016-09-08

<b>Test Result :</b>	<b>PASS*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Jack Zhang  
EMC Laboratory Manager

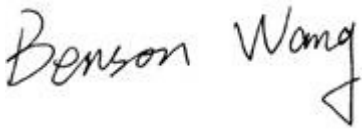

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## 2 Version

<b>Revision Record</b>				
<b>Version</b>	<b>Chapter</b>	<b>Date</b>	<b>Modifier</b>	<b>Remark</b>
00		2016-09-08		Original

<b>Authorized for issue by:</b>				
<b>Tested By</b>				2016-09-03
		_____		_____
		<b>(Benson Wang) /Project Engineer</b>		<b>Date</b>
<b>Checked By</b>				2016-09-08
		_____		_____
		<b>(Eric Fu) /Reviewer</b>		<b>Date</b>



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## 4 General Information

### 4.1 Client Information

Applicant:	Shenzhen 3Nod Digital Technology Co., Ltd.
Address of Applicant:	Building D, No.8 Langhui Road, Tangxiayong Community, Songgang Street, Baoan District, Shenzhen City, Guangdong Province, P.R. China
Manufacturer:	Shenzhen 3Nod Digital Technology Co., Ltd.
Address of Manufacturer:	Building D, No.8 Langhui Road, Tangxiayong Community, Songgang Street, Baoan District, Shenzhen City, Guangdong Province, P.R. China
Factory:	Shenzhen 3Nod Digital Technology Co., Ltd.
Address of Factory:	Building D, No.8 Langhui Road, Tangxiayong Community, Songgang Street, Baoan District, Shenzhen City, Guangdong Province, P.R. China

### 4.2 General Description of EUT

Product Name:	SHADOW WIRELESS
Model No.:	SOL-EP1140
Trade Mark:	SOL REPUBLIC
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.1 Single mode + EDR
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	Portable production
Antenna Type:	Integral
Antenna Gain:	2.5dBi
Power Supply	Li-Ion Polymer Battery 3.7V 125mAh (Charge by USB port)



### 4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China  
518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

### 4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

### 4.5 Deviation from Standards

None.

### 4.6 Abnormalities from Standard Conditions

None.

### 4.7 Other Information Requested by the Customer

None.



## 5 SAR Evaluation

### 5.1 RF Exposure Compliance Requirement

#### 5.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

##### 4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

#### 5.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$$\left[ \frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \cdot \sqrt{f(\text{GHz})} \right] \leq 3.0$$
 for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where

$f(\text{GHz})$  is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion

#### 5.1.3 EUT RF Exposure

The Max Conducted Peak Output Power is 0.84dBm in highest channel(2.480GHz);

The best case gain of the antenna is 2.5dBi.

$EIRP = 0.84\text{dBm} + 2.5\text{dBi} = 3.34\text{dBm}$

3.34dBm logarithmic terms convert to numeric result is nearly 2.16mW

According to the formula. calculate the EIRP test result:

$$\left[ \frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \cdot \sqrt{f(\text{GHz})} \right]$$

General RF Exposure =  $(2.16\text{mW} / 5 \text{ mm}) \times \sqrt{2.480\text{GHz}} = 0.68$  ①

SAR requirement:

$S = 3.0$

② ;

① < ②.

So the SAR report is not required.