



REPORT No.: SZ20070033S01

# RF EXPOSURE EXEMPT REPORT

**APPLICANT** : Guilin Zhishen Information  
Technology Co.,Ltd.

**PRODUCT NAME** : CRANE 2S

**MODEL NAME** : CR113

**BRAND NAME** : ZHIYUN

**FCC ID** : 2AIHFZYCR113

**STANDARD(S)** : 47CFR 2.1093  
KDB 447498

**RECEIPT DATE** : 2020-07-02

**TEST DATE** : 2020-07-04 to 2020-07-06

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Change History		
Version	Date	Reason for Change
1.0	2020-07-29	First edition



# 1. Technical Information

**Note:** Provide by applicant.

## 1.1 Applicant and Manufacturer Information

<b>Applicant:</b>	Guilin Zhishen Information Technology Co.,Ltd.
<b>Applicant Address:</b>	09 Huangtong Road, Tieshan Industrial Zone, Qixing District, Guilin, Guangxi, China
<b>Manufacturer:</b>	Guilin Zhishen Information Technology Co.,Ltd.
<b>Manufacturer Address:</b>	09 Huangtong Road, Tieshan Industrial Zone, Qixing District, Guilin, Guangxi, China

## 1.2 Equipment Under Test (EUT) Description

<b>Product Name:</b>	CRANE 2S
<b>Serial No.:</b>	(N/A, marked #1 by test site)
<b>Hardware Version:</b>	1.0
<b>Software Version:</b>	1.74
<b>Equipment Type:</b>	Bluetooth LE
<b>Bluetooth Version:</b>	5.0
<b>Operating Frequency Range:</b>	2402MHz - 2480MHz
<b>Modulation Type:</b>	GFSK(1Mbps)
<b>Antenna Type:</b>	PCB Antenna
<b>Antenna Gain:</b>	2.99dBi



### 1.3 Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title	Method determination /Remark
1	47 CFR§2.1093	Radio Frequency Radiation Exposure Evaluation: portable devices	No deviation
2	KDB 447498 D01v06	General RF Exposure Guidance	No deviation
<b>Note 1:</b> Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.			



## 2. Device Category and RF Exposure Limit

Per user manual, this device is a CRANE 2S. Based on 47CFR 2.1093, this device belongs to portable device category with General Population/Uncontrolled exposure.

### **Portable Devices:**

47CFR 2.1093(b)

For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

### **General Population/Uncontrolled Exposure:**

47CFR 2.1093(d) (2)

Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.



### 3. RF Output Power

#### <Bluetooth Output Power>

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
Bluetooth LE	CH 00	2402	<b>-0.97</b>
	CH 19	2440	-1.04
	CH 39	2480	-1.51
Tune-up Limit			1.0

**Note 1:** The output power refers to report (Report No.: SZ20070033W01).

## 4. RF Exposure Evaluation

### ➤ Standalone Transmission SAR Evaluation:

1. According to KDB 447498 section 4.3.1, the 1-g SAR test exclusion thresholds at test separation Distances  $\leq 50$  mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0.$$

- $f(\text{GHz})$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

2. When the device is used, 5mm as the most conservative minimum test separation distance was used for evaluating.

Channel	Frequency (GHz)	Max. Tune-up Power (dBm)	Max. Power (mW)	Test Distance (mm)	Result	Exclusion Thresholds for 1-g SAR
CH 00	2.402	1.0	1.26	5	0.39	3.0

**Note:** The conduction power was rounded in mW.

3. When standalone SAR is not required to be measured, per FCC KDB 447498 D01v06 4.3.2), the following equation must be used to estimate the standalone 1g SAR.

$$\text{Estimated SAR} = \frac{\sqrt{f(\text{GHz})}}{7.5} \cdot \frac{\text{Max. power of channel, mW}}{\text{Min. Separation Distance, mm}}$$

Mode	Max. Tune-up Power (dBm)	Exposure Position	Hand/Body
		Test Distance (mm)	5
Bluetooth	1.0	Estimated SAR (W/kg)	0.187

### ➤ Simultaneous SAR Evaluation:

This device only incorporates one Bluetooth transmitter, therefore simultaneous SAR evaluation is not required.



## Annex A Testing Laboratory Information

### 1. Identification of the Responsible Testing Laboratory

<b>Laboratory Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
<b>Laboratory Address:</b>	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
<b>Telephone:</b>	+86 755 36698555
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### 2. Identification of the Responsible Testing Location

<b>Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
<b>Address:</b>	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

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