



## Shenzhen Huaxia Testing Technology Co., Ltd

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

Telephone: +86-755-26648640

Fax: +86-755-26648637

Website: [www.cqa-cert.com](http://www.cqa-cert.com)

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# RF Exposure Evaluation Report

**Report No.:** CQASZ20220200181E-03  
**Applicant:** Zhuhai Qiannuo Technology Co.,Ltd  
**Address of Applicant:** floor9, building 2, No.88, Xiangshan Road, Tangjiawan Town, high tech Zone, Zhuhai, China  
**Equipment Under Test (EUT):**  
**EUT Name:** Wireless mechanical keyboard  
**Model No.:** NJ80-AP, NJ80, NJ80v3  
**Test Model No.:** NJ80-AP  
**Brand Name:** Keydous  
**FCC ID:** 2A4G3-NJ80  
**Standards:** 47 CFR Part 1.1307  
47 CFR Part 2.1093  
KDB447498D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2022-2-14  
**Date of Test:** 2022-2-14 to 2022-02-28  
**Date of Issue:** 2022-3-3  
**Test Result:** PASS\*

\*In the configuration tested, the EUT complied with the standards specified above.

**Tested By:** Lewis Zhou

( Lewis Zhou )

**Reviewed By:** Rock Huang

( Rock Huang )

**Approved By:** Jack Ai

( Jack Ai )



## 1 Version

### Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20220200181E-03	Rev.01	Initial report	2022-3-3

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### 3 General Information

#### 3.1 Client Information

Applicant:	Zhuhai Qiannuo Technology Co.,Ltd
Address of Applicant:	floor9, building 2, No.88, Xiangshan Road, Tangjiawan Town, high tech Zone, Zhuhai, China
Manufacturer:	Zhuhai Jianxingzhe Science and Technology Co., Ltd
Address of Manufacturer:	No.13 OF Baxiang, Wangshan Village, Qianwu Town, Doumen District, Zhuhai, CHINA
Factory:	Zhuhai Jianxingzhe Science and Technology Co., Ltd
Address of Factory:	No.13 OF Baxiang, Wangshan Village, Qianwu Town, Doumen District, Zhuhai, CHINA

#### 3.2 General Description of EUT

Product Name:	Wireless mechanical keyboard
Model No.:	NJ80-AP, NJ80, NJ80v3
Test Model No.:	NJ80-AP
Trade Mark:	Keydous
Software Version:	V320
Hardware Version:	V0.5
Power Supply:	Li-ion battery: DC 3.7V 4800mAh, Charge by DC 5V for adapter

#### 3.3 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK
Transfer Rate:	1Mbps
Number of Channel:	40
Product Type:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location
Antenna Type:	PCB antenna
Antenna Gain:	2.14dBi

#### 3.4 General Description of BT

Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Transfer Rate:	1Mbps/2Mbps/3Mbps
Number of Channel:	79
Product Type:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location
Antenna Type:	PCB antenna
Antenna Gain:	2.14dBi

## 4 SAR Evaluation

### 4.1 RF Exposure Compliance Requirement

#### 4.1.1 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.

#### 4.1.2 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:

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

$f(\text{GHz})$  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

### 4.1.3 EUT RF Exposure

#### 1) For BLE

##### Measurement Data

GFSK mode (1Mbps)				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-1.82	-1.5±1	-0.5	0.891
Middle(2440MHz)	-0.03	0±1	1.0	1.259
Highest(2480MHz)	1.53	1.5±1	2.5	1.778

Worst case: GFSK mode (1Mbps)						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-1.82	-1.5±1	-0.5	0.891	0.276	3.0
Middle (2440MHz)	-0.03	0±1	1.0	1.259	0.393	
Highest (2480MHz)	1.53	1.5±1	2.5	1.778	0.560	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20220200181E-01  
BT can not simultaneous transmitting at same time.

## 2) For BT

### Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-1.77	-1.5±1	-0.5	0.891
Middle(2441MHz)	-0.08	0±1	1.0	1.259
Highest(2480MHz)	1.37	1.5±1	2.5	1.778
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-2.11	-2.0±1	-1.0	0.794
Middle(2441MHz)	-0.25	0±1	1.0	1.259
Highest(2480MHz)	1.08	1.0±1	2.0	1.585
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-1.92	-2.0±1	-1.0	0.794
Middle(2441MHz)	-0.33	0±1	1.0	1.259
Highest(2480MHz)	1.14	1.0±1	2.0	1.585

Worst case: GFSK mode						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-1.77	-1.5±1	-0.5	0.891	0.276	3.0
Middle (2441MHz)	-0.08	0±1	1.0	1.259	0.393	
Highest (2480MHz)	1.37	1.5±1	2.5	1.778	0.560	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20220200181E-02 BLE can not simultaneous transmitting at same time.

\*\*\* END OF REPORT \*\*\*