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RF Exposure Evaluation Report

Report No.: CQASZ20210100001EX-02

Applicant: Dongguan Lingjie Electronics & Technology Co., Ltd

Address of Applicant: Building A(Floor 1-4) and B(Floor 1-5), No. 16 Zhenxing North Road, Taiyuan Community, Xiegang Town, Dongguan City, Guangdong Province, 523590, P.R.C

Equipment Under Test (EUT):

EUT Name: Wireless Keyboard

Model No.: K913, K901, K902, K903, K911, K912, K921, K922, K923, K931, K932, K933

Test Model No.: K913

Brand Name: N/A

FCC ID: 2ANBU-K913922901933

Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06

Date of Receipt: 2020-12-21

Date of Test: 2020-12-21 to 2021-1-19

Date of Issue: 2021-1-19

Test Result: PASS*

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

Tested By:

Jun Li

(Jun Li)

Reviewed By:

Ares Liu

(Ares Liu)

Approved By:

Sheek Luo

(Sheek Luo)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20210100001EX-02	Rev.01	Initial report	2021-1-19

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3 General Information

3.1 Client Information

Applicant:	Dongguan Lingjie Electronics & Technology Co., Ltd
Address of Applicant:	Building A(Floor 1-4) and B(Floor 1-5), No. 16 Zhenxing North Road, Taiyuan Community, Xiegang Town, Dongguan City, Guangdong Province, 523590, P.R.C
Manufacturer:	Dongguan Lingjie Electronics & Technology Co., Ltd
Address of Manufacturer:	Building A(Floor 1-4) and B(Floor 1-5), No. 16 Zhenxing North Road, Taiyuan Community, Xiegang Town, Dongguan City, Guangdong Province, 523590, P.R.C

3.2 General Description of EUT

Product Name:	Wireless Keyboard
Model No.:	K913, K901, K902, K903, K911, K912, K921, K922, K923, K931,K932, K933
Test Model No.:	K913
Trade Mark:	N/A
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	2403.85-2479.85MHz
Modulation Type:	GFSK
Transfer Rate:	1Mbps
Number of Channel:	16
Fixed frequency mode	Combine buttons to enter engineering mode
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Antenna Type:	PCB antenna
Antenna Gain:	0dBi
EUT Power Supply:	battery: 3V(1.5V*2)

Note:

Model No.:K913, K901, K902, K903, K911, K912, K921, K922, K923, K931,K932, K933

Only the model K913 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

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 ≤ 50 mm are determined by:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{[\sqrt{f(\text{GHz})}]^2} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where} \right]$$

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

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 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 2.4G

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2403.85MHz)	-9.417	-10.5±1	-9.5	0.112
Middle(2441.85MHz)	-9.650	-11±1	-10	0.100
Highest(2479.85MHz)	-10.255	-11.5±1	-10.5	0.089

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 (2403.85MHz)	-9.417	-10.5±1	-9.5	0.112	0.035	3.0
Middle (2441.85MHz)	-9.650	-11±1	-10	0.100	0.031	
Highest (2479.85MHz)	-10.255	-11.5±1	-10.5	0.089	0.028	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20210100001EX-01