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RF Exposure Evaluation Report

Report No.: CQASZ20210600883E-03
Applicant: XIAMEN LIYIN TECHNOLOGY CO., LTD
Address of Applicant: 2F, NO.9, Tianyang Road Jimei, Xiamen, Fujian, China
Equipment Under Test (EUT):
EUT Name: Mini Pocket Printer
Model No.: MP100, MP100S, MP300, MP300S, Q1, Q2, Q3, M1, M2, M3, P100, P100S, P200, P200S, P300, P300S, P8, P8S
Test Model No.: MP100
Brand Name: N/A
FCC ID: 2A2GELY1902-01
Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2021-06-22
Date of Test: 2021-06-22 to 2021-07-02
Date of Issue: 2021-07-02
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
CQASZ20210600883E-03	Rev.01	Initial report	2021-07-02

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3 General Information

3.1 Client Information

Applicant:	XIAMEN LIYIN TECHNOLOGY CO., LTD
Address of Applicant:	2F, NO.9, Tianyang Road Jimei, Xiamen, Fujian, China
Manufacturer:	XIAMEN LIYIN TECHNOLOGY CO., LTD
Address of Manufacturer:	2F, NO.9, Tianyang Road Jimei, Xiamen, Fujian, China
Factory:	XIAMEN LIYIN TECHNOLOGY CO., LTD
Address of Factory:	2F, NO.9, Tianyang Road Jimei, Xiamen, Fujian, China

3.2 General Description of EUT

Product Name:	Mini Pocket Printer
Model No.:	MP100, MP100S, MP300, MP300S, Q1, Q2, Q3, M1, M2, M3, P100, P100S, P200, P200S, P300, P300S, P8, P8S
Test Model No.:	MP100
Trade Mark:	N/A
Hardware Version:	V2.0
Software Version:	P100_YC3121_NoSSFlash_200DPI.bin
Power Supply:	lithium battery: DC3.7V, 1000mAh, Charge by DC5.0V

3.3 General Description of BT

Operation Frequency:	2402MHz~2480MHz
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK mode
Transfer Rate:	1Mbps/2Mbps/3Mbps
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Antenna Type:	PCB antenna
Antenna Gain:	2.58dBi

3.4 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK
Transfer Rate:	1Mbps
Number of Channel:	40
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Antenna Type:	PCB antenna
Antenna Gain:	2.58dBi

Note:

Model No.: MP100, MP100S, MP300, MP300S, Q1, Q2, Q3, M1, M2, M3, P100, P100S, P200, P200S, P300, P300S, P8, P8S

Only the model MP100 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:

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

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

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

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-4.010	-5.0±1	-4.0	0.398
Middle(2441MHz)	-3.320	-4±1	-3	0.501
Highest(2480MHz)	-2.740	-3.5±1	-2.5	0.562
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-3.260	-4±1	-3.0	0.501
Middle(2441MHz)	-2.530	-3.5±1	-2.5	0.562
Highest(2480MHz)	-2.030	-3±1	-2.0	0.631
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-2.920	-3.5±1	-2.5	0.562
Middle(2441MHz)	-2.190	-3.0±1	-2.0	0.631
Highest(2480MHz)	-1.610	-2.5±1	-1.5	0.708

Worst case: 8DPSK mode						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-2.920	-3.5±1	-2.5	0.562	0.174	3.0
Middle (2441MHz)	-2.190	-3.0±1	-2.0	0.631	0.197	
Highest (2480MHz)	-1.610	-2.5±1	-1.5	0.708	0.223	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20210600883E-01

2) For BLE

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	0.03	-0.5±1	0.5	1.122
Middle(2440MHz)	0.66	-0±1	1.0	1.259
Highest(2480MHz)	0.42	-0.5±1	0.5	1.122

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)	0.03	-0.5±1	0.5	1.122	0.348	3.0
Middle (2440MHz)	0.66	-0±1	1.0	1.259	0.393	
Highest (2480MHz)	0.42	-0.5±1	0.5	1.122	0.353	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20210600883E-02
BDR and BLE can not simultaneous transmitting at same time.