

MAXIMUM PERMISSIBLE EXPOSURE EVALUATION REPORT

Applicant: Xiamen Akubela Innovation Technology Co., Ltd.

Address: 9/F, No.56 Guanri Road, Software Park II ,Xiamen 361009, China

Product Name: Smart Lock(WiFi)

FCC ID: 2BNRZ-SL20

Standard(s): 47 CFR §1.1310, 47 CFR §2.1091,
47 CFR §15.247(i)

Report Number: 2502U66810E-RF-00E

Report Date: 2025/10/30

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).

Alice Tan

Reviewed By: Alice Tan

Title: RF Engineer

Pedro Yun

Approved By: Pedro Yun

Title: RF Supervisor

Bay Area Compliance Laboratories Corp. (Dongguan)
No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China

Tel: +86-769-86858888

Fax: +86-769-86858891

www.baclcorp.com.cn

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2502U66810E-RF-00E	Original Report	2025/10/30

1. GENERAL INFORMATION

1.1 General Description Of Equipment under Test

EUT Name:	Smart Lock(WiFi)
EUT Model:	SL20
Rated Input Voltage:	DC 6V from 1.5V*4 battery
EUT Received Date:	2025/6/28
EUT Received Status:	Good

2.RF EXPOSURE EVALUATION (MPE)

2.1. RF Exposure Evaluation

2.1.1 Applicable Standard

According to subpart 15.247(i), and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

2.1.2 Calculation formula

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

2.1.3 Calculated Data:

Operation Modes	Frequency (MHz)	Antenna Gain [▲]		Conducted output power including Tune-up Tolerance [▲]		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
BLE	2402-2480	4.8	3.02	11.0	12.59	20.00	0.008	1.0
2.4G Wifi	2412-2462	4.8	3.02	23.5	223.87	20.00	0.135	1.0
NFC	13.56	/	/	-45.56	0.00003	20.00	<<0.001	0.98
Note: NFC field strength is 49.64dBμV/m @ 3m = -45.56 dBm(0.00003mW) EIRP. That equal to antenna gain is 0dBi and used the EIRP value as conducted power.								

Note:

The Antenna Gain and Conducted output power including Tune-up Tolerance provided by manufacturer.

BLE and 2.4G Wifi can't transmit simultaneously, but BLE or 2.4G Wifi can transmit simultaneously with NFC:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

$$= S_{2.4G\ Wifi} / S_{limit-2.4G\ Wifi} + S_{NFC} / S_{limit-NFC}$$

$$= 0.135 / 1.0 + 0.001 / 0.98$$

$$= 0.14$$

$$< 1$$

Result: The device meet FCC MPE at 20 cm distance

EXHIBIT A - EUT PHOTOGRAPHS

Please refer to the attachment 2502U66810E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2502U66810E-RF-INP EUT INTERNAL PHOTOGRAPHS.

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