FCC 47 CFR Part 15 Subpart B

TEST REPORT

For

KINGFORCE LOCK

MODEL NUMBER: A0AA-8703-820

REPORT NUMBER: E01A23070160F00201

ISSUE DATE: July 21, 2023

FCC ID :2BB3S-A0AA87018201

Prepared for

ZHEJIANG HUILI LOCK CO.,LTD.
No.6,Tiangong 5th Road,Tiancheng Industrial Zone,Yueqing City,Zhejiang Province,China

Prepared by

Dong Guan Anci Electronic Technology Co., Ltd.

1-2 Floor, Building A, No.11, Headquarters 2 Road, Songshan, Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	July 21, 2023	Initial Issue	Duke Liu

Summary of Test Results

Emission			
Standard	**Test Item**	**Limit**	**Result**
FCC 47 CFR Part 15 Subpart B	Radiated emissions below 1GHz	FCC Part 15.109	Pass
	Conducted emissions	FCC Part 15.107	Pass

*The measurement result for the sample received is <Pass> according to <FCC 47 CFR Part 15 Subpart B> when <Accuracy Method> decision rule is applied.

CONTENTS

1. ATTESTATION OF TEST RESULTS 5

2. TEST METHODOLOGY 6

3. FACILITIES AND ACCREDITATION 6

4. CALIBRATION AND UNCERTAINTY 7

4.1. MEASURING INSTRUMENT CALIBRATION 7

4.2. MEASUREMENT UNCERTAINTY 7

5. EQUIPMENT UNDER TEST 8

5.1. DESCRIPTION OF EUT 8

5.2. TEST MODE 8

5.3. SUPPORT UNITS FOR SYSTEM TEST 8

6. MEASURING EQUIPMENT AND SOFTWARE USED 9

7. MISSION TEST 10

7.1. Radiated emissions below 1GHz 10

7.2. Conducted emissions 16

APPENDIX: PHOTOGRAPHS OF TEST CONFIGURATION 20

APPENDIX: PHOTOGRAPHS OF THE EUT 21

1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	ZHEJIANG HUILI LOCK CO.,LTD.
Address:	No.6,Tiangong 5th Road,Tiancheng Industrial Zone,Yueqing City,Zhejiang Province,China

Manufacturer Information

Company Name:	ZHEJIANG HUILI LOCK CO.,LTD.
Address:	No.6,Tiangong 5th Road,Tiancheng Industrial Zone,Yueqing City,Zhejiang Province,China

Factory Information

Company Name:	ZHEJIANG HUILI LOCK CO.,LTD.
Address:	No.6,Tiangong 5th Road,Tiancheng Industrial Zone,Yueqing City,Zhejiang Province,China

EUT Information

EUT Name:	KINGFORCE LOCK
Model:	A0AA-8703-820
Series Model:	D1, A0AA-8701-820, A0AA-8702-820, A0AA-8704-820, A0AA-8705-820, A0AA-8706-820, A0AA-8707-820, A0AA-8708-820, A0AA-8709-820, A0AA-870A-820
Sample Received Date:	July 8, 2023
Sample Status:	Normal
Sample ID:	A23070160 002
Date of Tested:	July 14, 2023

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC 47 CFR Part 15 Subpart B	**Pass**

Prepared By:

Duke Liu

Project Engineer

Checked By:

Poal Chen

Project Engineer

Approved By:

Tiger Xu

Laboratory Supervisor

2. TEST METHODOLOGY

All tests were performed in accordance with the standard FCC 47 CFR Part 15 Subpart B

3. FACILITIES AND ACCREDITATION

Site Description

Name of Firm	:	Dong Guan Anci Electronic Technology Co., Ltd.
Site Location	:	1-2 Floor, Building A, No.11, Headquarters 2 Road, Songshan, Lake Hi-tech Industrial Development Zone, Dongguan City,evelopment Zone, Dongguan City, Guangdong Pr., China.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Measurement Frequency Range	K	U(dB)
Radiated emissions below 1GHz	9kHz - 30MHz	2	2.2
	30MHz -1GHz	2	4.13
Conducted emissions	0.009 MHz - 0.15 MHz	2	4
	0.15MHz - 30MHz	2	3.63
Note1: This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.			
Note 2: According to the standard CISPR 16-4-2, the MU for the Conducted emissions from the AC mains power ports using AMN should not exceed 3.8 in range of 9kHz to 150kHz and 3.4 in range of 150kHz to 30MHz. We have considered the test results containing the value of Ulab (in dB) for the measurement instrumentation actually used for the measurements.			

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name		KINGFORCE LOCK
Model		A0AA-8703-820
Series Model		D1, A0AA-8701-820, A0AA-8702-820, A0AA-8704-820, A0AA-8705-820, A0AA-8706-820, A0AA-8707-820, A0AA-8708-820, A0AA-8709-820, A0AA-870A-820
Model Difference		The series model is consistent with the main model in circuit design,circuit layout, use of components and internal structure, the differences mainly due to the inconsistent model name and apparent colors,including colors as metallic silver,black and Black with gold wire.
EUT Classification		Class B
Ratings		Input:DC 5V/DC 6V
Power Supply	DC	5V
	Battery	DC 6V by four 1.5V batteries in series

5.2. TEST MODE

Test Mode	Description
M01	Normal Working: Operate according to the user manual(The EUT is powered by batteries)
M02	Normal Working: Operate according to the user manual(The EUT is powered by an adapter)

5.3. SUPPORT UNITS FOR SYSTEM TEST

No.	Equipment	Manufacturer	Model No.	Serial No.	Remark
1	Adapter	Lulian	CD170	C1712031981	/
2	USB cable	Lulian	/	/	1m

6. MEASURING EQUIPMENT AND SOFTWARE USED

Test Equipment of Radiated emissions below 1GHz					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Due Date**
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100302	2023/5/10	2024/5/9
Pre-Amplifier	Anritsu	MH648A	M57886	2023/5/10	2024/5/9
Bilog Antenna	Schwarzbeck	VULB9163	VULB9163-1290	2022/12/12	2023/12/11
RF Cable	ZKJC	ZT06S-NJ-NJ-11M	19060398	2023/5/10	2024/5/9
RF Cable	ZKJC	ZT06S-NJ-NJ-0.5M	19060400	2023/5/10	2024/5/9
RF Cable	ZKJC	ZT06S-NJ-NJ-2.5M	19060404	2023/5/10	2024/5/9
EMI Test Receiver	ROHDE&SCHWARZ	ESPI7	100502	2022/10/8	2023/10/7
Test Software	Farad	EZ-EMC (Ver.FA-03A2 RE)	N/A	N/A	N/A

Test Equipment of Conducted emissions					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Due Date**
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	101358	2023/5/10	2024/5/9
1# Shielded Room	chengyu	8m*4m*3.3m	N/A	2022/11/22	2025/11/21
LISN	ROHDE&SCHWARZ	ENV216	101413	2022/10/8	2023/10/7
Test Software	Farad	EZ-EMC (Ver.ANCI-3A1)	N/A	N/A	N/A

7. MISSION TEST

7.1. RADIATED EMISSIONS BELOW 1GHZ

LIMITS

Below 1 GHz

CFR 47 FCC Part 15 Subpart B		
Frequency (MHz)	Class A	Class B
	Field strength (dBuV/m) (at 3 m)	Field strength (dBuV/m) (at 3 m)
30 - 88	49.5	40
88 - 216	53.9	43.5
216 - 960	56.9	46
Above 960	60	54

Test Frequency Range of Radiated Disturbance Measurement

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

NOTE:

(1) The limit for radiated test was performed according to FCC Part 15, Subpart B;
(2) The tighter limit applies at the band edges;
(3) Emission level (dBuV/m) = 20log Emission level (uV/m),
3m Emission level = 10 m Emission level + 20log(10 m/3 m);

TEST PROCEDURE

Below 1 GHz and above 30 MHz

The setting of the spectrum analyser

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak and QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.4-2014.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp was used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80 cm above ground.

4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

6. Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal used.

7. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

8. For measurement below 1 GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

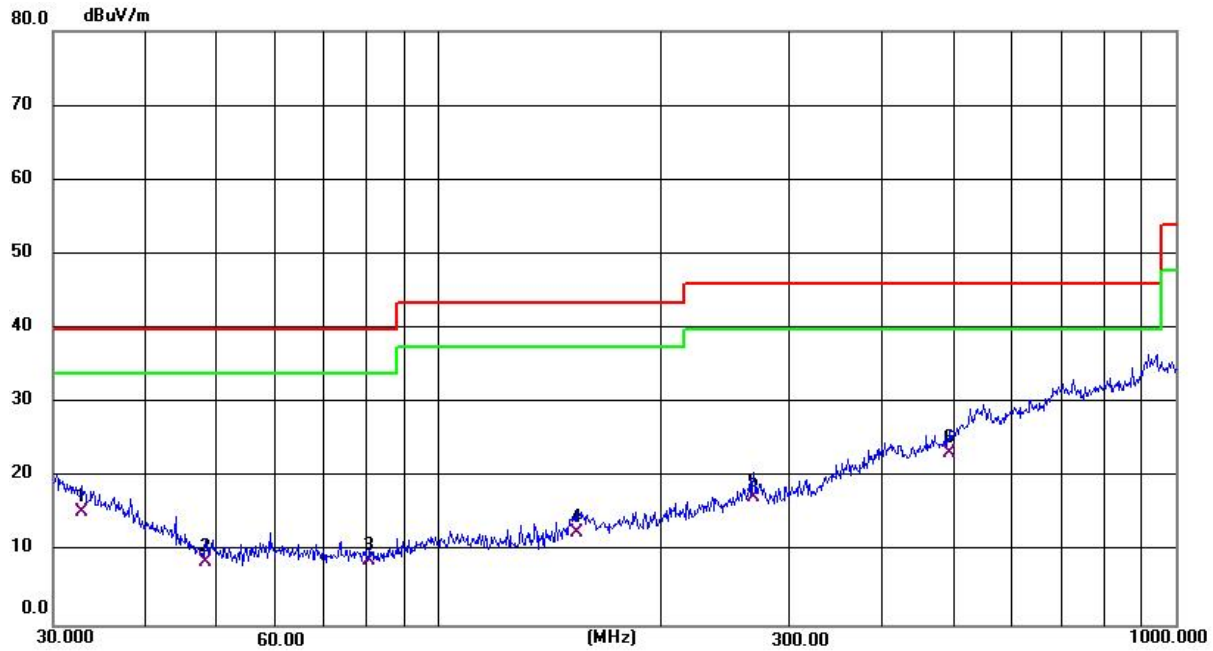
TEST ENVIRONMENT

Temperature	26℃	Relative Humidity	54%
Atmosphere Pressure	101kPa		

TEST MODE

Pre-test Mode:	M01 ~ M02
Final Test Mode:	M01, M02

TEST RESULTS



Limit:	**FCC Part 15B B Radiation(QP)**	**Antenna:**	**Horizontal**
EUT:	**KINGFORCE LOCK**	**Test Time:**	**2023/7/14**
M/N.:	**A0AA-8703-820**	**Power Rating:**	**DC 6V**
Mode:	**M01**	**Test Engineer:**	**Eli**

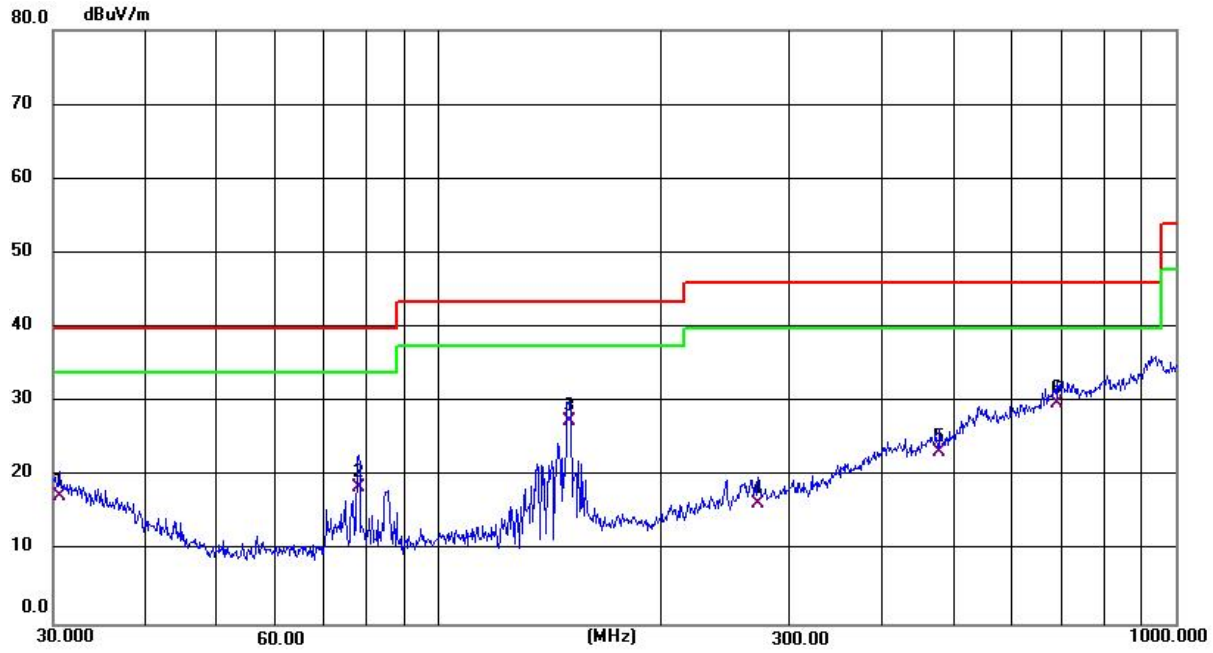
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	32.8637	24.53	-9.23	15.30	40.00	-24.70	QP	100	354
2	48.3318	25.70	-17.00	8.70	40.00	-31.30	QP	100	354
3	80.6442	26.93	-18.03	8.90	40.00	-31.10	QP	100	354
4	153.7385	25.86	-13.26	12.60	43.50	-30.90	QP	100	354
5	267.5455	27.53	-10.13	17.40	46.00	-28.60	QP	100	354
6 *	494.1984	26.91	-3.61	23.30	46.00	-22.70	QP	100	354

Limit:	**FCC Part 15B B Radiation(QP)**	**Antenna:**	**Vertical**
EUT:	**KINGFORCE LOCK**	**Test Time:**	**2023/7/14**
M/N.:	**A0AA-8703-820**	**Power Rating:**	**DC 6V**
Mode:	**M01**	**Test Engineer:**	**Eli**

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1 *	30.8535	28.40	-8.20	20.20	40.00	-19.80	QP	100	0
2	53.8818	27.70	-17.90	9.80	40.00	-30.20	QP	100	0
3	86.5029	30.22	-17.92	12.30	40.00	-27.70	QP	100	0
4	101.6443	30.24	-15.74	14.50	43.50	-29.00	QP	100	0
5	153.2004	26.12	-13.42	12.70	43.50	-30.80	QP	100	0
6	305.6800	27.13	-10.53	16.60	46.00	-29.40	QP	100	0

Remark: 1. Result = Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)

2. Margin = Result - Limit



Limit:	**FCC Part 15B B Radiation(QP)**	**Antenna:**	**Horizontal**
EUT:	**KINGFORCE LOCK**	**Test Time:**	**2023/7/14**
M/N.:	**A0AA-8703-820**	**Power Rating:**	**AC120V/60Hz**
Mode:	**M02**	**Test Engineer:**	**Eli**

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	30.6379	25.48	-8.08	17.40	40.00	-22.60	QP	100	0
2	77.8654	36.58	-17.98	18.60	40.00	-21.40	QP	100	0
3 *	150.5378	41.57	-14.17	27.40	43.50	-16.10	QP	100	0
4	271.3246	26.75	-10.45	16.30	46.00	-29.70	QP	100	0
5	478.8456	27.44	-4.14	23.30	46.00	-22.70	QP	100	0
6	691.9867	26.77	3.03	29.80	46.00	-16.20	QP	100	0

Limit:	**FCC Part 15B B Radiation(QP)**	**Antenna:**	**Vertical**
EUT:	**KINGFORCE LOCK**	**Test Time:**	**2023/7/14**
M/N.:	**A0AA-8703-820**	**Power Rating:**	**AC120V/60Hz**
Mode:	**M02**	**Test Engineer:**	**Eli**

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	44.4308	36.83	-15.43	21.40	40.00	-18.60	QP	100	359
2	50.5860	38.87	-17.57	21.30	40.00	-18.70	QP	100	359
3	73.1025	44.61	-17.81	26.80	40.00	-13.20	QP	100	359
4	83.2298	44.66	-18.06	26.60	40.00	-13.40	QP	100	359
5	136.4598	44.47	-15.77	28.70	43.50	-14.80	QP	100	359
6 *	147.9214	46.61	-14.81	31.80	43.50	-11.70	QP	100	359

Remark: 1. Result = Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)

2. Margin = Result - Limit

7.2. CONDUCTED EMISSIONS

LIMITS

CFR 47 FCC Part15 Subpart B				
FREQUENCY (MHz)	Class A (dBμV)		Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46*
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

TEST PROCEDURE

1. The testing follows the guidelines in ANSI C63.4-2014.

2. The EUT was placed on the top of a rotating table 0.8 meters above the horizontal ground plane and being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

3. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

4. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

5. Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal used.

6. LISN at least 80 cm from nearest part of EUT chassis.

7. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

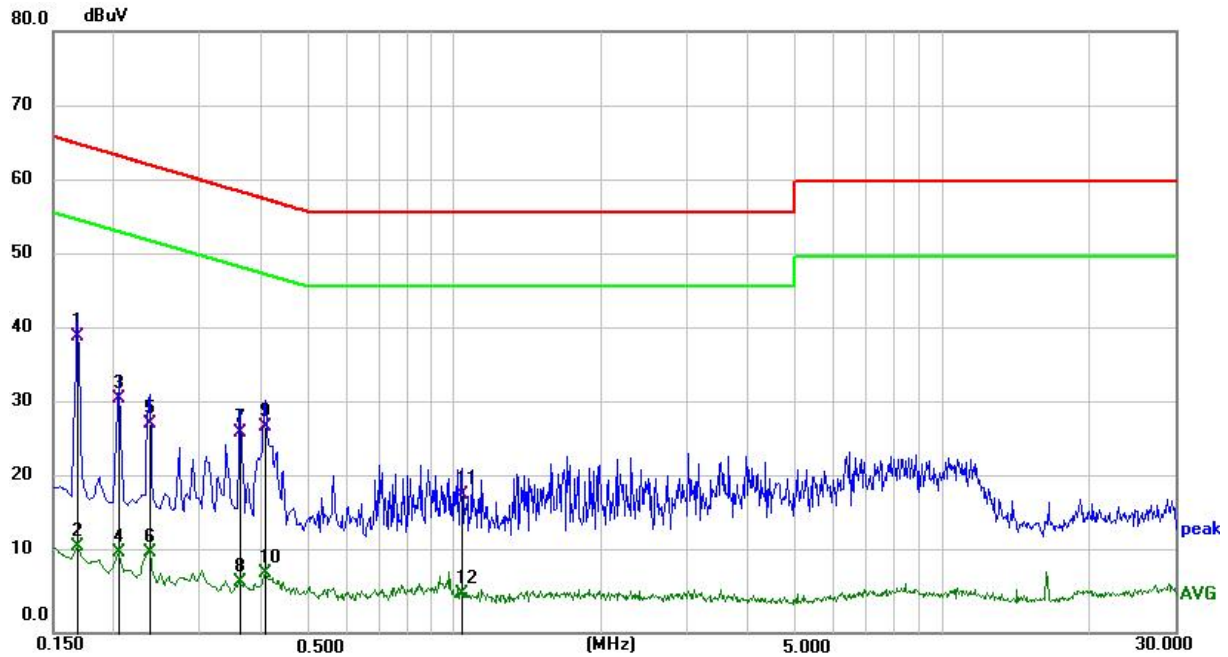
TEST ENVIRONMENT

Temperature	26℃	Relative Humidity	54%
Atmosphere Pressure	101kPa		

TEST MODE

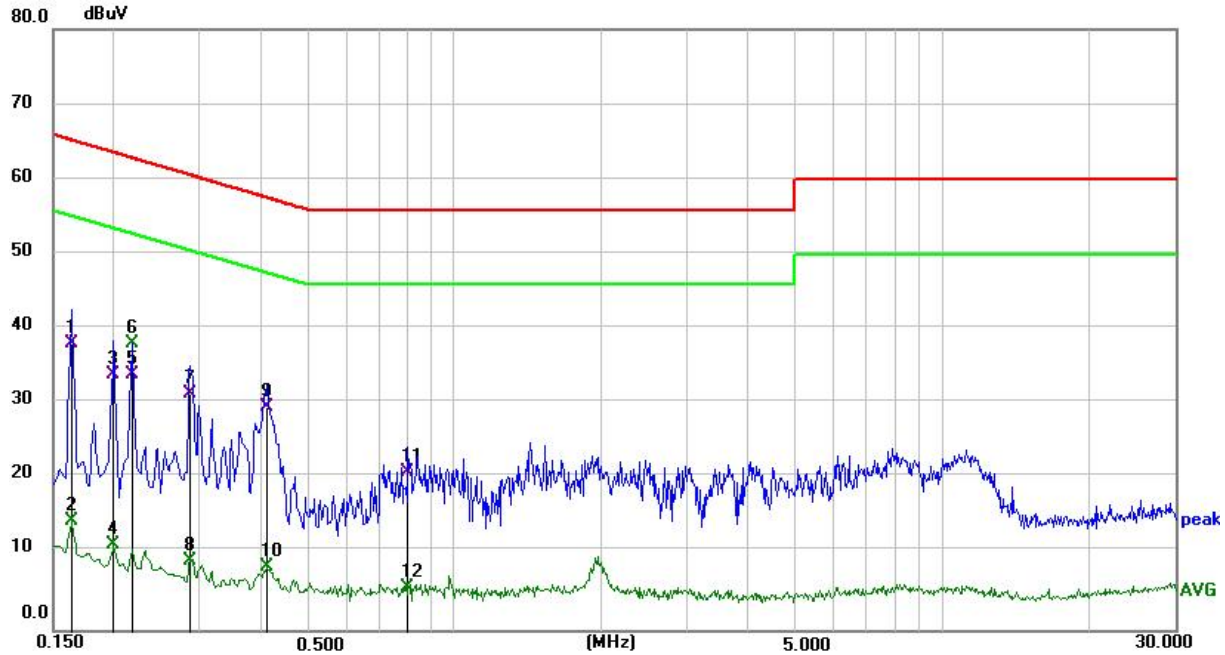
Pre-test Mode:	M02
Final Test Mode:	M02

TEST RESULTS



Limit:	**FCC Part 15 B Conduction(QP)**	**Phase:**	**L1**
EUT:	**KINGFORCE LOCK**	**Test Time:**	**2023/7/14**
M/N.:	**A0AA-8703-820**	**Power Rating:**	**AC120V/60Hz**
Mode:	**M02**	**Test Engineer:**	**Eli**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1680	29.73	9.77	39.50	65.06	-25.56	QP
2	0.1680	1.75	9.77	11.52	55.06	-43.54	AVG
3	0.2040	21.38	9.82	31.20	63.45	-32.25	QP
4	0.2040	0.92	9.82	10.74	53.45	-42.71	AVG
5	0.2355	18.12	9.68	27.80	62.25	-34.45	QP
6	0.2355	1.09	9.68	10.77	52.25	-41.48	AVG
7	0.3615	16.72	9.88	26.60	58.69	-32.09	QP
8	0.3615	-3.14	9.88	6.74	48.69	-41.95	AVG
9	0.4065	17.49	9.91	27.40	57.72	-30.32	QP
10	0.4065	-1.98	9.91	7.93	47.72	-39.79	AVG
11	1.0365	8.51	9.79	18.30	56.00	-37.70	QP
12	1.0365	-4.51	9.79	5.28	46.00	-40.72	AVG



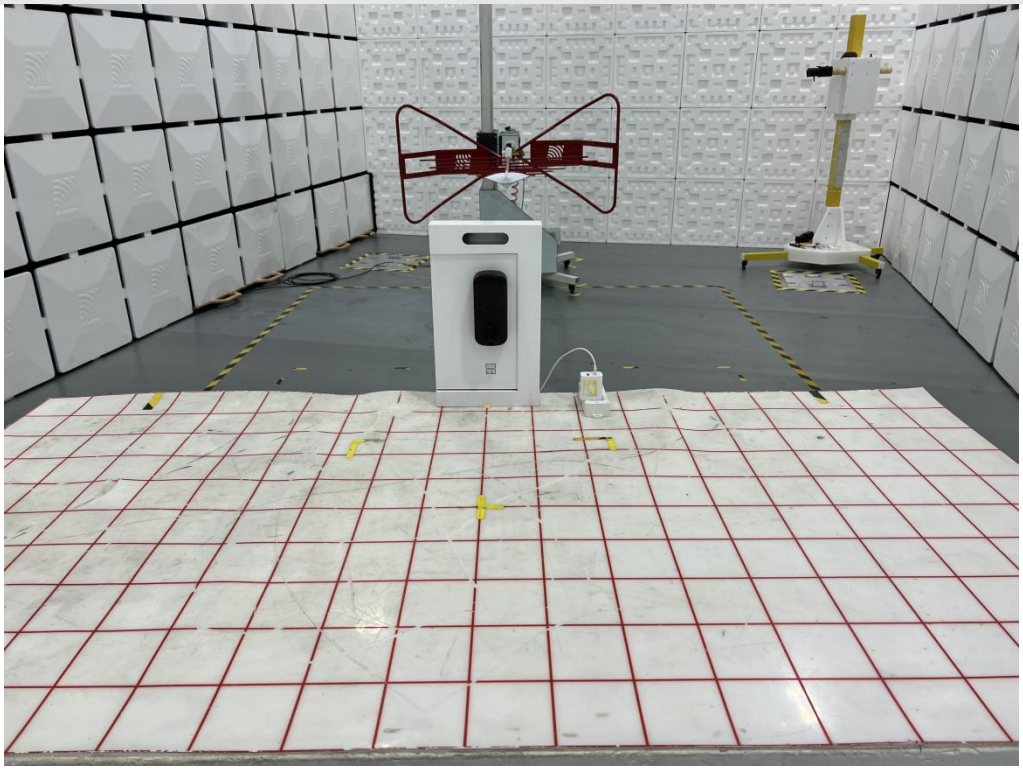
Limit:	**FCC Part 15 B Conduction(QP)**	**Phase:**	**N**
EUT:	**KINGFORCE LOCK**	**Test Time:**	**2023/7/14**
M/N.:	**A0AA-8703-820**	**Power Rating:**	**AC120V/60Hz**
Mode:	**M02**	**Test Engineer:**	**Eli**

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1635	28.49	9.71	38.20	65.28	-27.08	QP
2	0.1635	4.85	9.71	14.56	55.28	-40.72	AVG
3	0.1995	24.34	9.76	34.10	63.63	-29.53	QP
4	0.1995	1.74	9.76	11.50	53.63	-42.13	AVG
5	0.2175	24.41	9.79	34.20	62.91	-28.71	QP
6	0.2175	28.49	9.79	38.28	52.91	-14.63	AVG
7	0.2850	21.87	9.73	31.60	60.67	-29.07	QP
8	0.2850	-0.38	9.73	9.35	50.67	-41.32	AVG
9	0.4110	20.03	9.77	29.80	57.63	-27.83	QP
10	0.4110	-1.23	9.77	8.54	47.63	-39.09	AVG
11	0.8025	11.28	9.82	21.10	56.00	-34.90	QP
12	0.8025	-3.98	9.82	5.84	46.00	-40.16	AVG

Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
Margin = Result - Limit

APPENDIX: PHOTOGRAPHS OF TEST CONFIGURATION

Radiated emissions below 1GHz

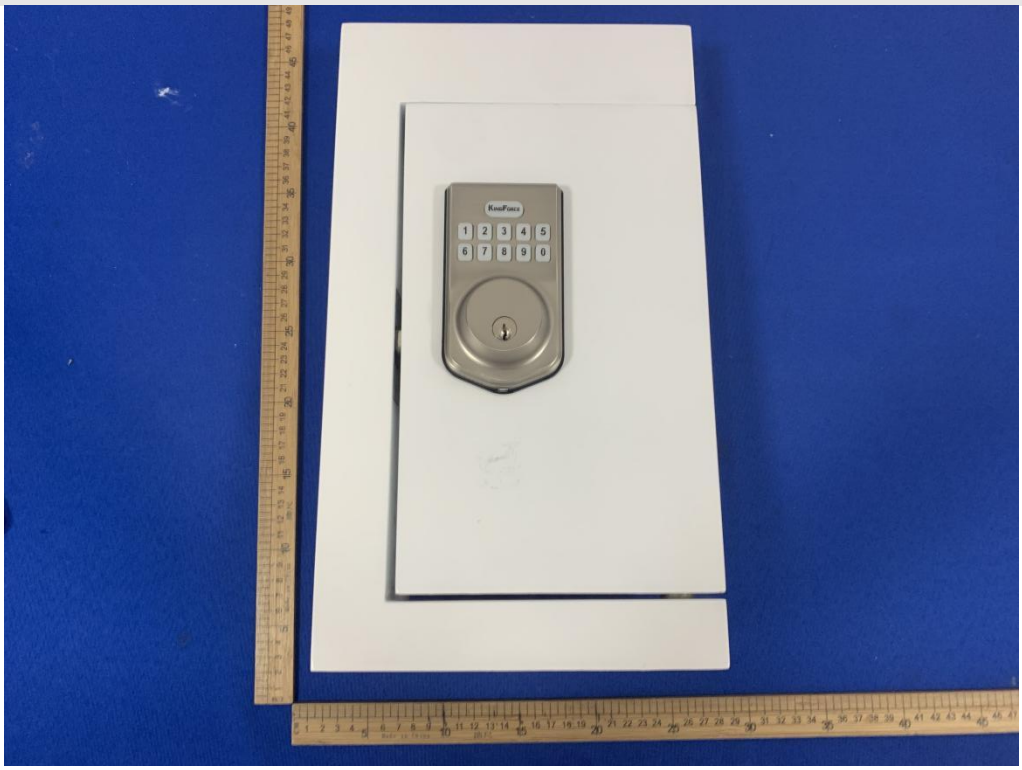


Conducted emissions

APPENDIX: PHOTOGRAPHS OF THE EUT

External-1

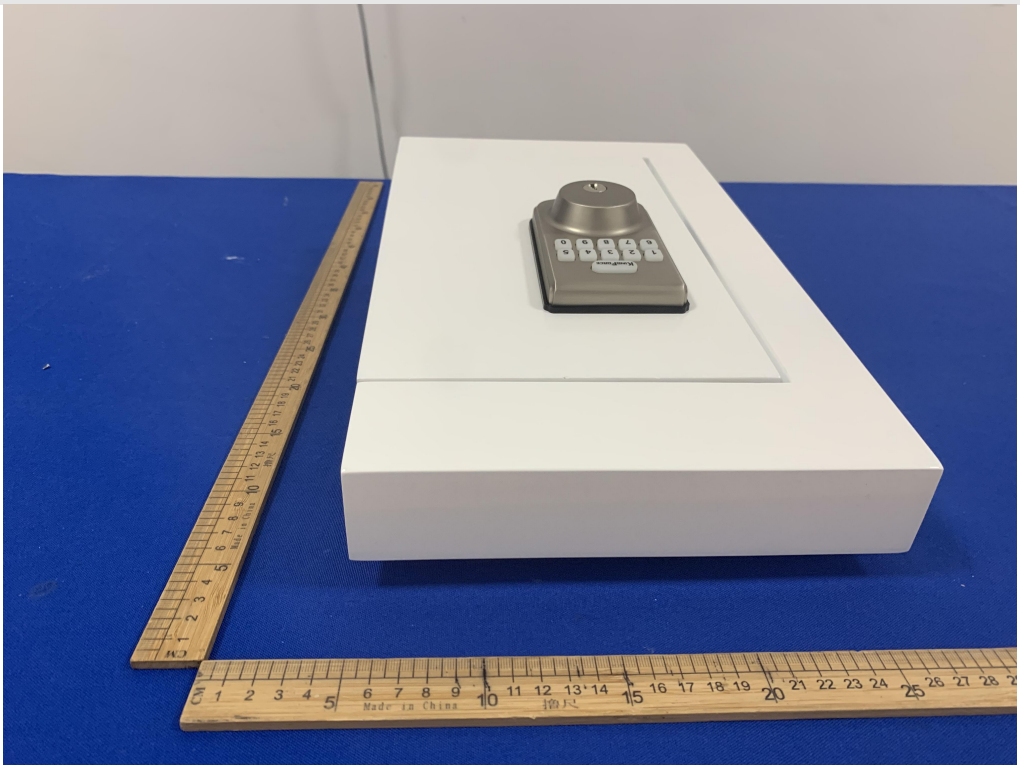
External-2



External-3

External-4

External-5



External-6

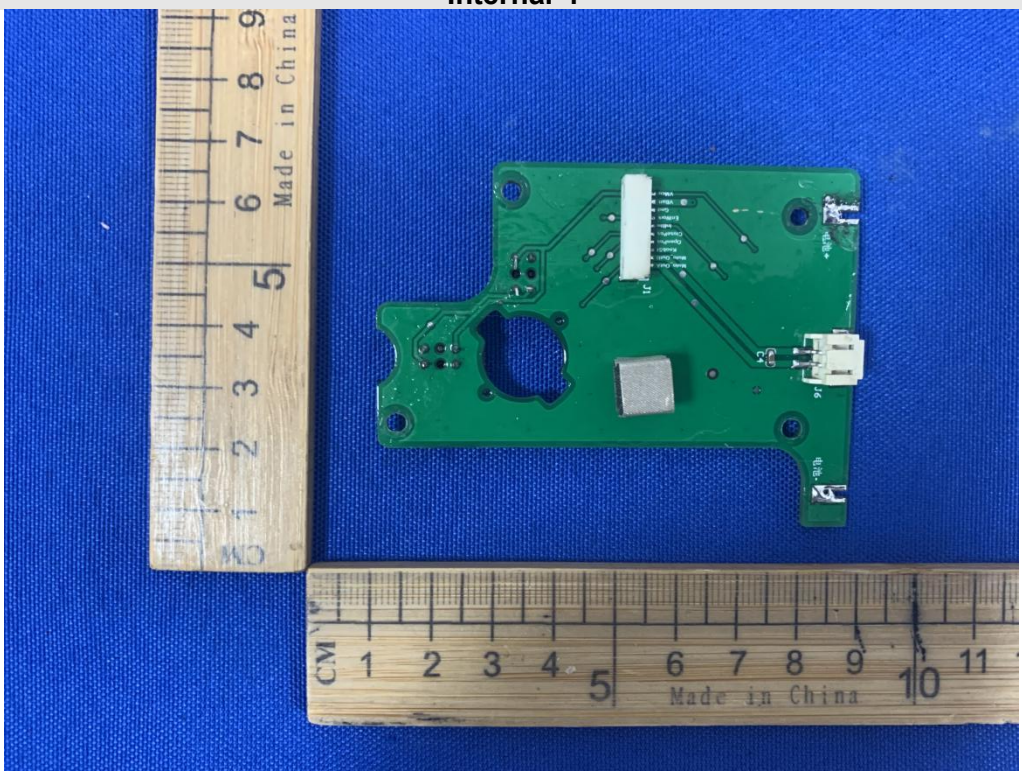
External-7

Internal-1

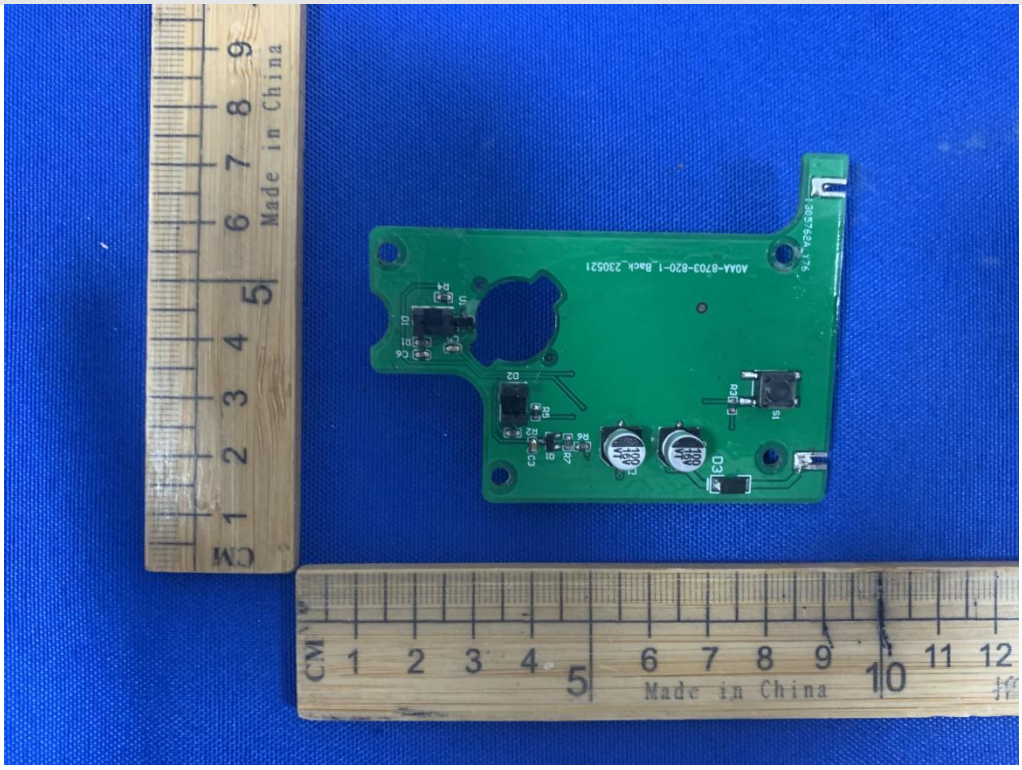
Internal-2

Internal-3

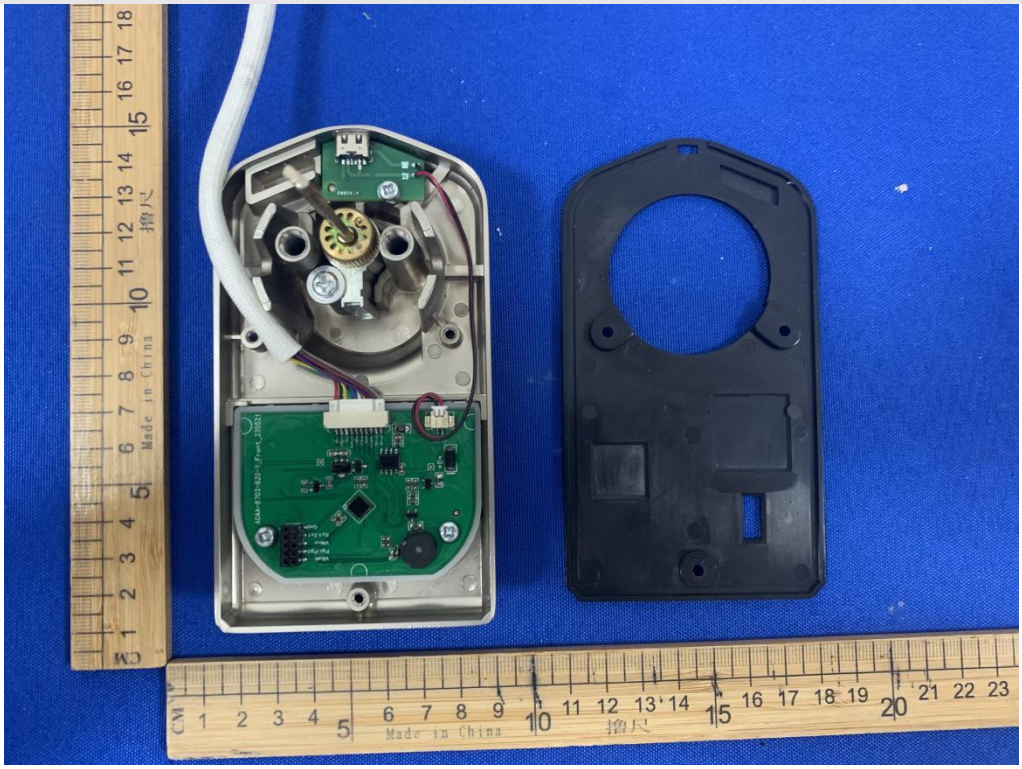
Internal-4



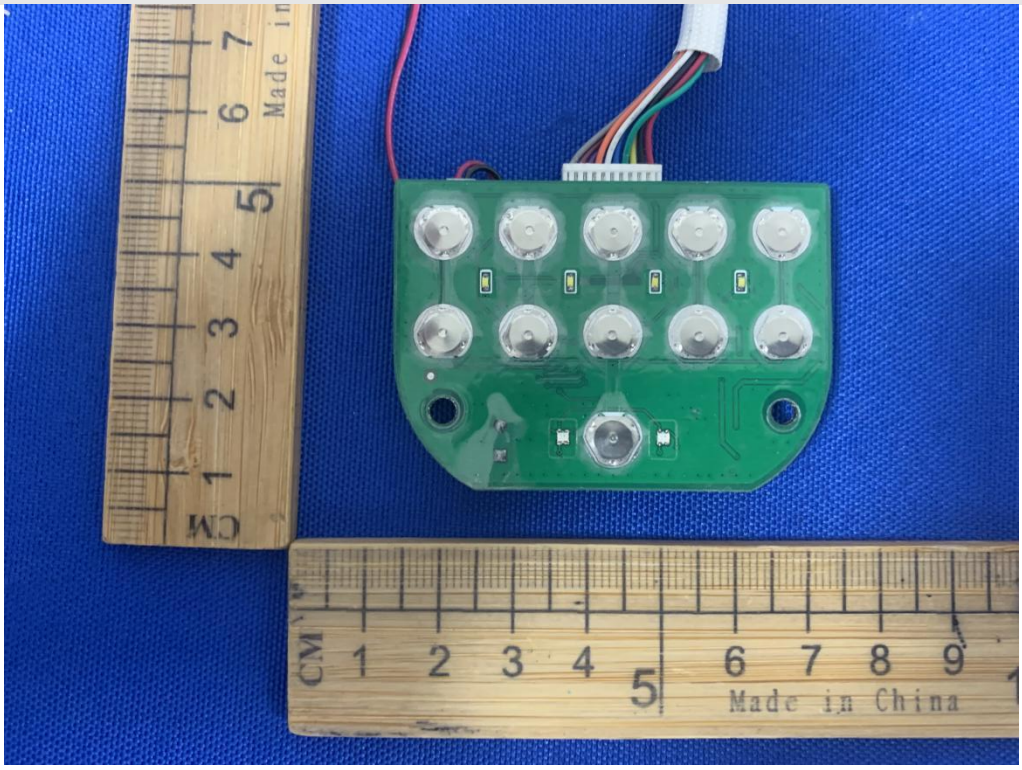
Internal-5



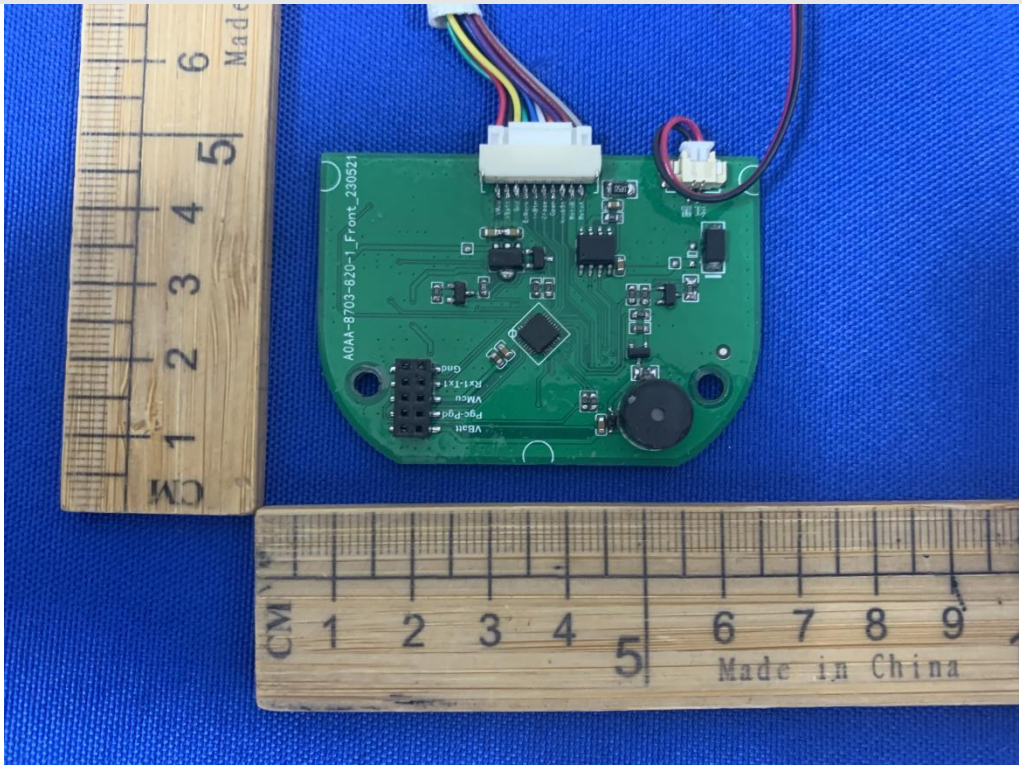
Internal-6



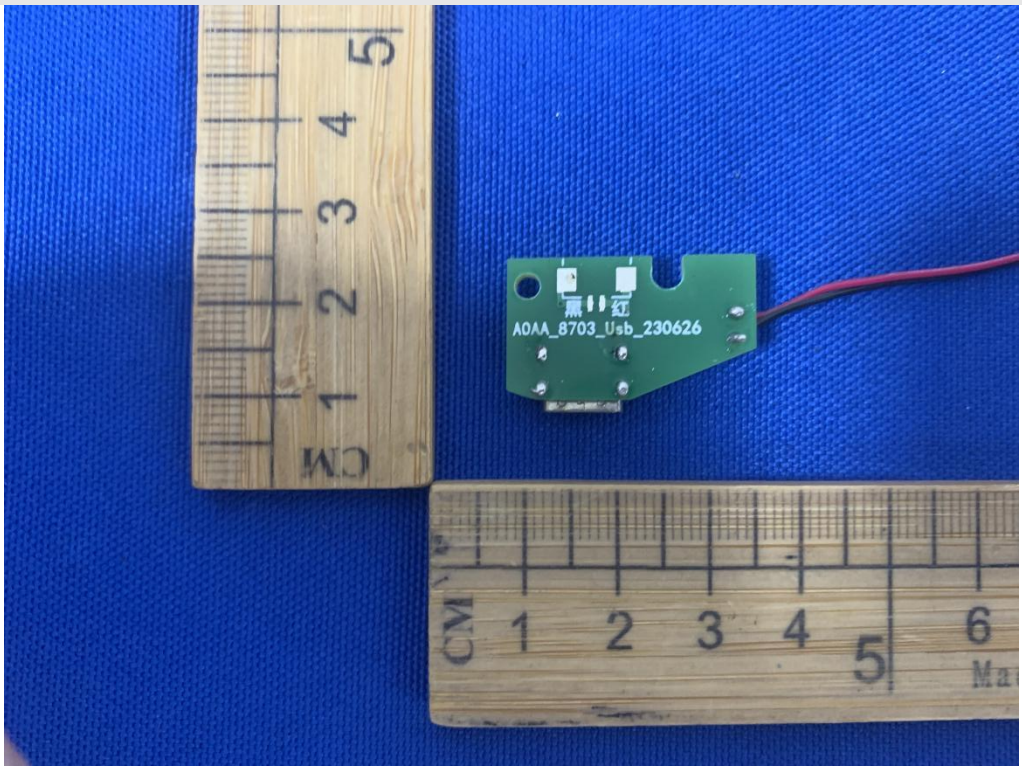
Internal-7



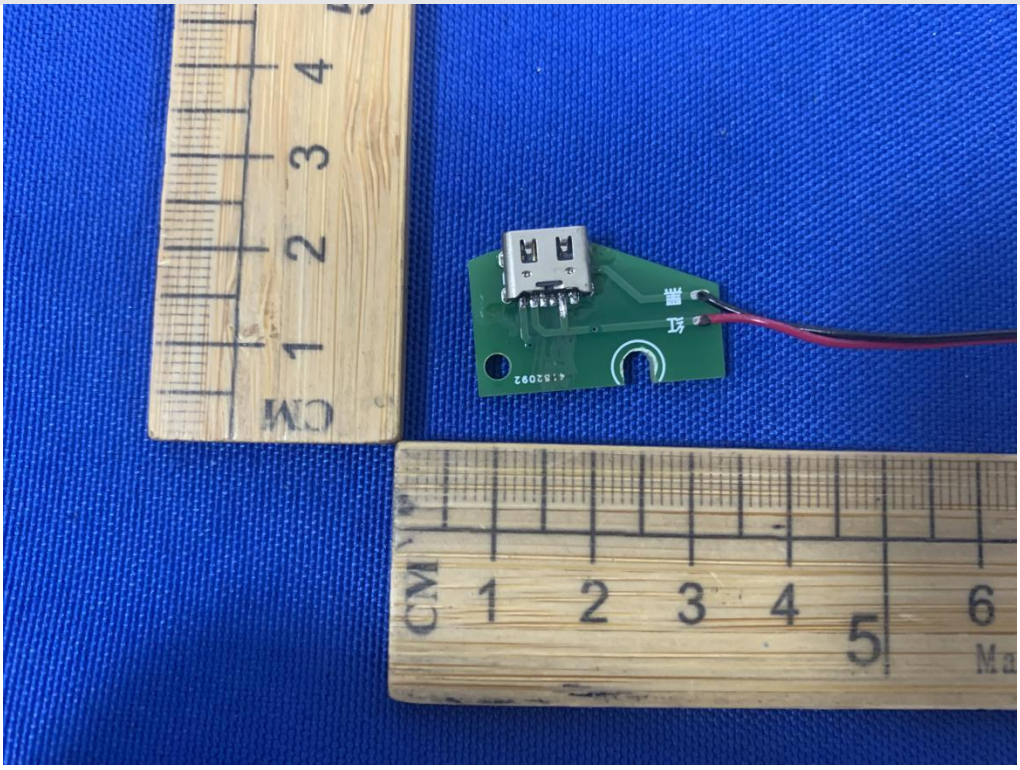
Internal-8



Internal-9



Internal-10



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