FCC Part 15, Subpart B, Class B

TEST REPORT

SHENZHEN LANGHENG ELECTRONIC CO., LTD

BC30 V2.0

Test Model: BC30 V2.0

Additional Model No: RC40 V2.0

Prepared for	:	SHENZHEN LANGHENG ELECTRONIC CO., LTD
Address	:	8/F 2nd Building, DongFangMing Industrial Center,33rd District, Bao'an, Shenzhen 518133, China.
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	101, 601, Xingyuan Industrial Park, Gushu Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China
Tel	:	(+86)755-82591330
Fax	:	(+86)755-82591332
Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com
Date of receipt of test sample	:	September 23, 2019
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	September 23, 2019 ~ September 29, 2019
Date of Report	:	October 17, 2019

FCC TEST REPORT
FCC Part 15, Subpart B, Class B(sDoC)

Report Reference No.	**:**	**LCS190920076AE**
Date Of Issue	:	October 17, 2019
Testing Laboratory Name	**:**	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address	:	101, 601, Xingyuan Industrial Park, Gushu Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure ...	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name	**:**	**SHENZHEN LANGHENG ELECTRONIC CO., LTD**
Address	:	8/F 2nd Building, DongFangMing Industrial Center,33rd District, Bao'an, Shenzhen 518133, China.
Test Specification		
Standard.....	:	FCC Part 15, Subpart B, Class B(sDoC), ANSI C63.4 -2014
Test Report Form No.	:	LCSEMC-1.0
TRF Originator.....	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	:	Dated 2011-03

Test Item Description.....	**:**	**BC30 V2.0**
Trade Mark.....	:	FENIX
Test Model	:	BC30 V2.0
Ratings	:	Input: DC 7.2V, 1.2A Output: DC 6V, 1.3A
Result	**:**	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Ray Yang / File administrators	Aking Jin / Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS190920076AE	October 17, 2019 Date of issue

Test Model.....	:	BC30 V2.0
EUT.....	:	BC30 V2.0
Applicant.....	**:**	**SHENZHEN LANGHENG ELECTRONIC CO., LTD**
Address.....	:	8/F 2nd Building, DongFangMing Industrial Center,33rd District, Bao'an, Shenzhen 518133, China.
Telephone.....	:	/
Fax.....	:	/
Manufacturer.....	**:**	**SHENZHEN LANGHENG ELECTRONIC CO., LTD**
Address.....	:	8/F 2nd Building, DongFangMing Industrial Center,33rd District, Bao'an, Shenzhen 518133, China.
Telephone.....	:	/
Fax.....	:	/
Factory.....	:	**/**
Address.....	:	/
Telephone.....	:	/
Fax.....	:	/

Test Result according to the standards on page 6: **Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	October 17, 2019	Initial Issue	Gavin Liang

TABLE OF CONTENTS

Test Report Description Page

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at mains terminals	FCC Part 15, Subpart B, Class B(sDoC), ANSI C63.4 -2014	Class B	N/A
Radiated disturbance	FCC Part 15, Subpart B, Class B(sDoC), ANSI C63.4 -2014	Class B	PASS
N/A is an abbreviation for Not Applicable.			

Test mode:		
Mode 1	Working	Record

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	BC30 V2.0
Trade Mark	:	FENIX
Test Model	:	BC30 V2.0
Additional Model	:	RC40 V2.0
Model Declaration	:	PCB board, structure and internal of these model(s) are the same, So no additional models were tested
Power Supply	:	Input: DC 7.2V, 1.2A Output: DC 6V, 1.3A
EUT Clock Frequency	:	≤108MHz

2.2. Description of Test Facility

Site Description

EMC Lab. : FCC Registration Number is 254912.

Industry Canada Registration Number is 9642A-1.

ESMD Registration Number is ARCB0108.

UL Registration Number is 100571-492.

TUV SUD Registration Number is SCN1081.

TUV RH Registration Number is UA 50296516-001.

NVLAP Registration Code is 600167-0.

2.3. Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.4. Measurement Uncertainty

Test	Parameters	Expanded Uncertainty (U_{lab})	Expanded Uncertainty (U_{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

3. TEST RESULTS

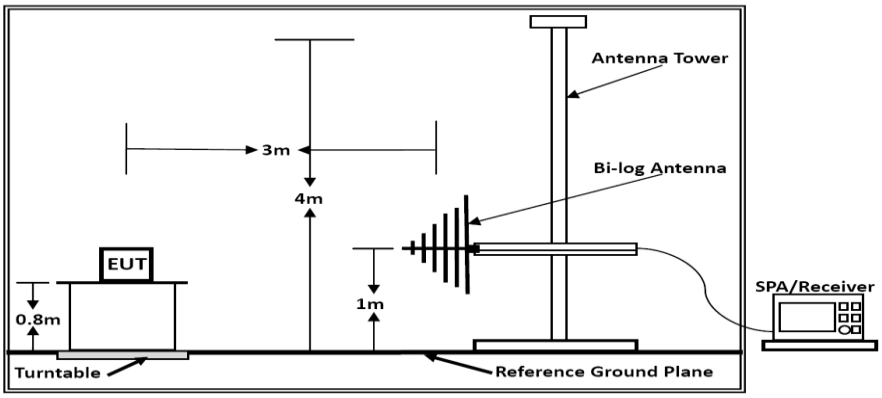
3.1.Radiated Emission Measurement

3.1.1. Test Equipment

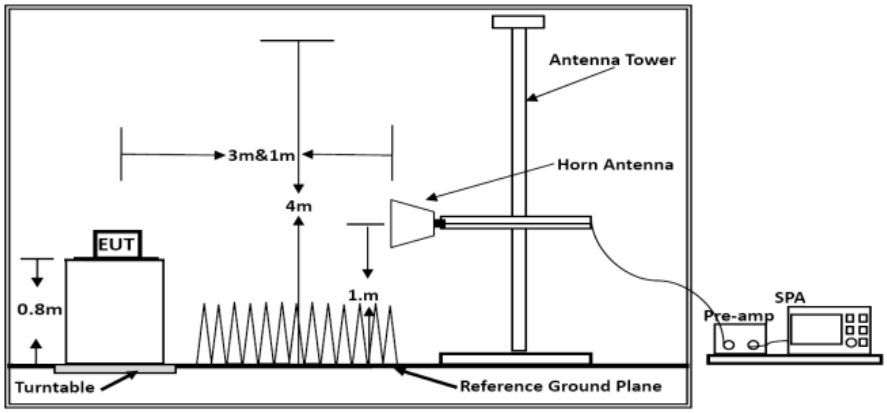
The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Software	AUDIX	E3	/	N/A
2	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2019-06-12
3	Positioning Controller	MF	MF-7082	/	2019-06-12
4	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2019-07-25
5	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2019-07-01
6	EMI Test Receiver	R&S	ESR 7	101181	2019-06-12
7	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2018-11-15
8	Broadband Preamplifier	/	BP-01M18G	P190501	2019-07-01
9	RF Cable-R03m	Jye Bao	RG142	CB021	2019-06-12
10	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2019-06-12

3.1.2. Block Diagram of Test Setup



Below 1GHz



Above 1GHz

3.1.3. Radiated Emission Limit (Class B)

Limits for Radiated Disturbance Below 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54
Remark: (1) Emission level (dB)μV = 20 log Emission level μV/m (2) The smaller limit shall apply at the cross point between two frequency bands. (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.			

Limits for Radiated Emission Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)
Above 1000	3	74	54
***Note: The lower limit applies at the transition frequency.			

3.1.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.1.5. Operating Condition of EUT

3.5.1.Setup the EUT as shown in Section 3.2.
3.5.2.Let the EUT work in test Mode 1 and measure it.

3.1.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna.

Both horizontal and vertical polarization of the antenna is set on measurement.
In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009 on radiated emission measurement.

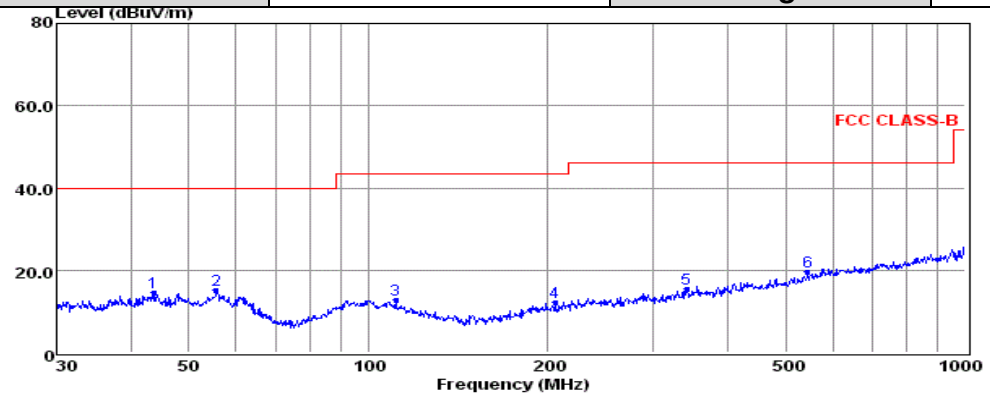
The bandwidth of the EMI test receiver is set at 120kHz, 300kHz.
The frequency range from 30MHz to 1000MHz is checked.
The frequency range from 1GHz to the frequency which about 5th carrier harmonic or 6GHz is checked.

3.1.7. Test Results

PASS.

The test result please refer to the next page.

Test Model	BC30 V2.0	**Test Mode**	Mode 1
Environmental Conditions	24.5℃, 54.8% RH	**Detector Function**	Quasi-peak
Pol	Vertical	**Distance**	3m
Test Engineer	Alisa	**Test Voltage**	DC 7.2V

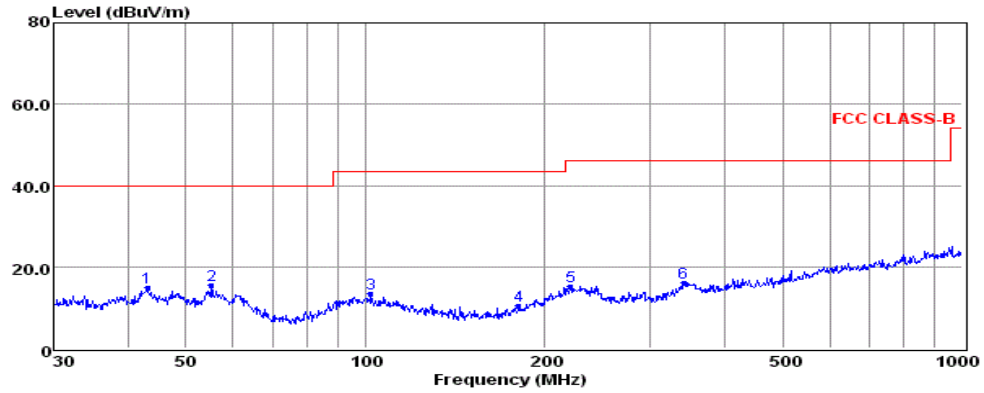


Env./Ins: 24.5℃/52.8%
pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	43.66	0.51	0.41	13.56	14.48	40.00	-25.52	QP
2	55.61	1.61	0.47	12.98	15.06	40.00	-24.94	QP
3	110.96	0.04	0.61	12.08	12.73	43.50	-30.77	QP
4	205.68	0.46	0.99	10.75	12.20	43.50	-31.30	QP
5	341.98	0.19	1.12	14.15	15.46	46.00	-30.54	QP
6	545.18	0.66	1.44	17.42	19.52	46.00	-26.48	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Test Model	BC30 V2.0	**Test Mode**	Mode 1
Environmental Conditions	24.5℃, 54.8% RH	**Detector Function**	Quasi-peak
Pol	Horizontal	**Distance**	3m
Test Engineer	Alisa	**Test Voltage**	DC 7.2V



Env./Ins: 24.5℃/52.8%
pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	43.05	0.67	0.50	13.56	14.73	40.00	-25.27	QP
2	55.22	2.01	0.46	13.01	15.48	40.00	-24.52	QP
3	102.00	-0.13	0.60	12.98	13.45	43.50	-30.05	QP
4	180.65	-0.16	0.89	9.74	10.47	43.50	-33.03	QP
5	220.62	3.03	0.95	11.23	15.21	46.00	-30.79	QP
6	341.98	0.85	1.12	14.15	16.12	46.00	-29.88	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

4. PHOTOGRAPHS OF TEST SETUP

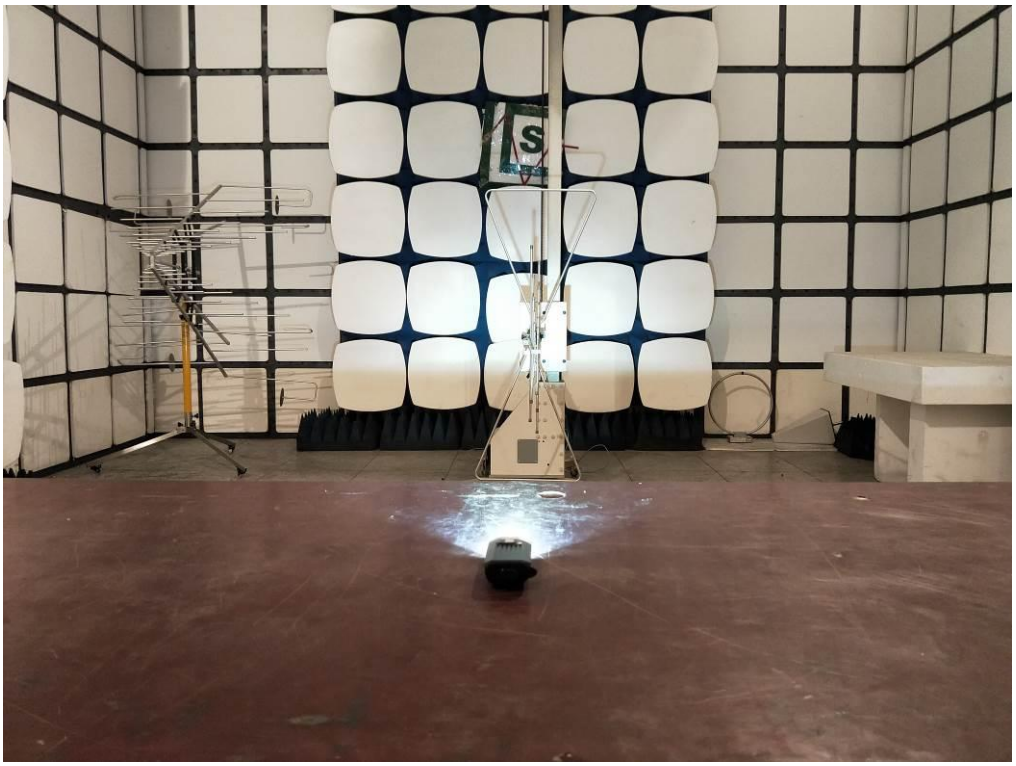


Photo of Radiated Measurement

5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

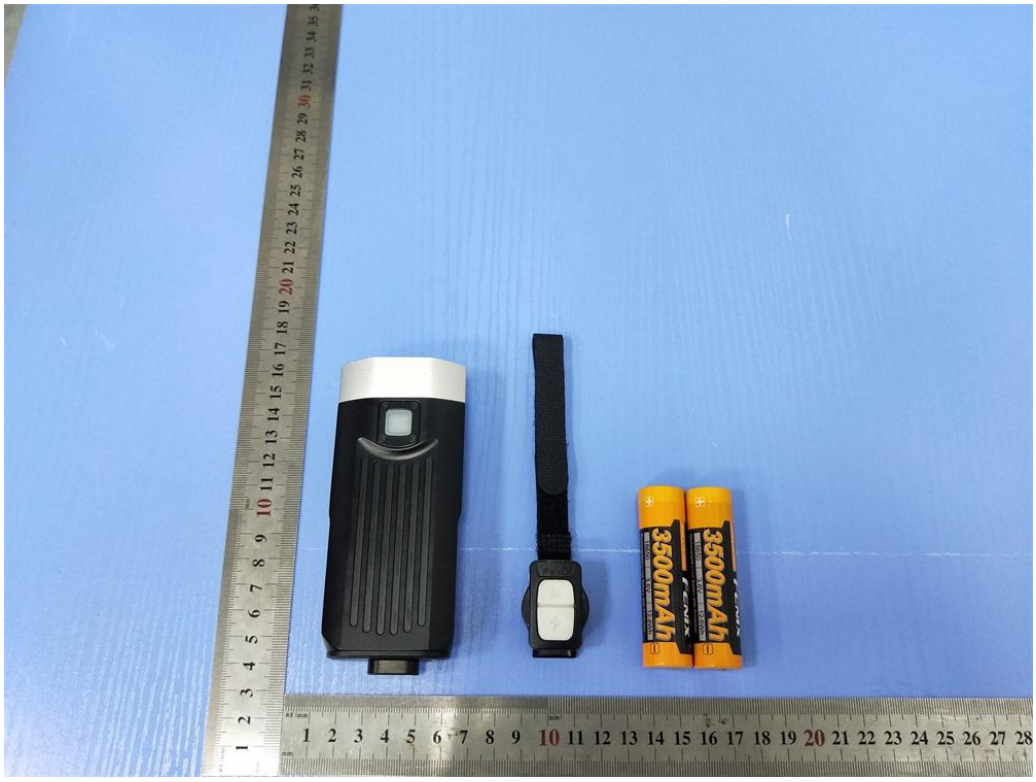


Fig. 1

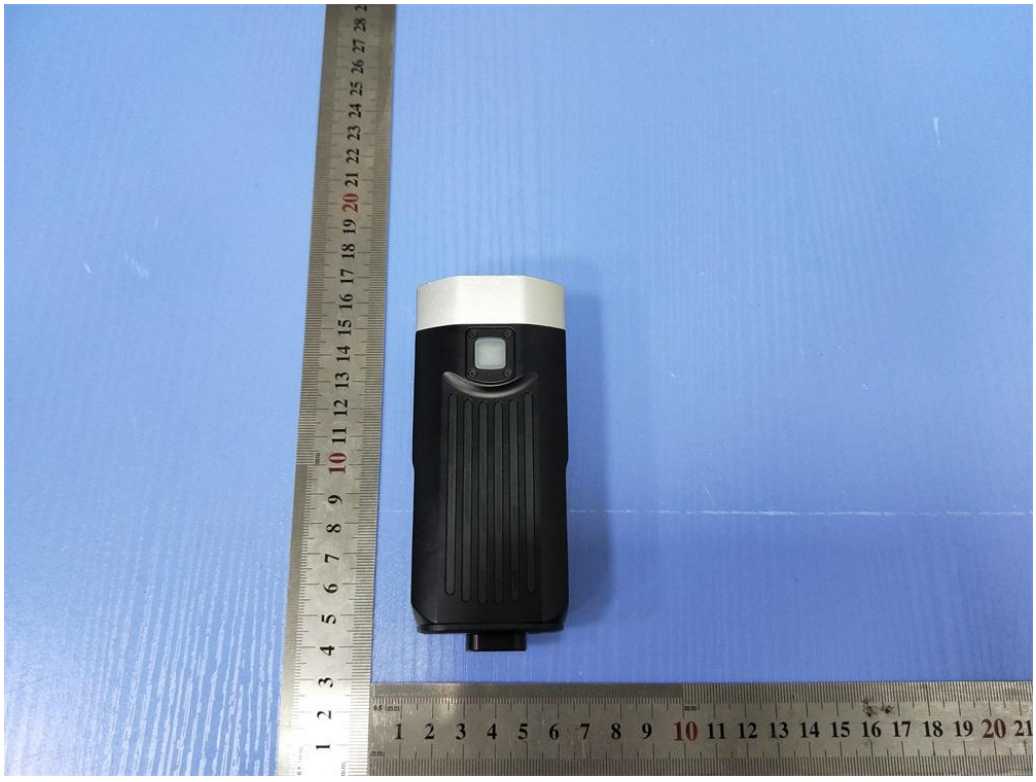


Fig. 2

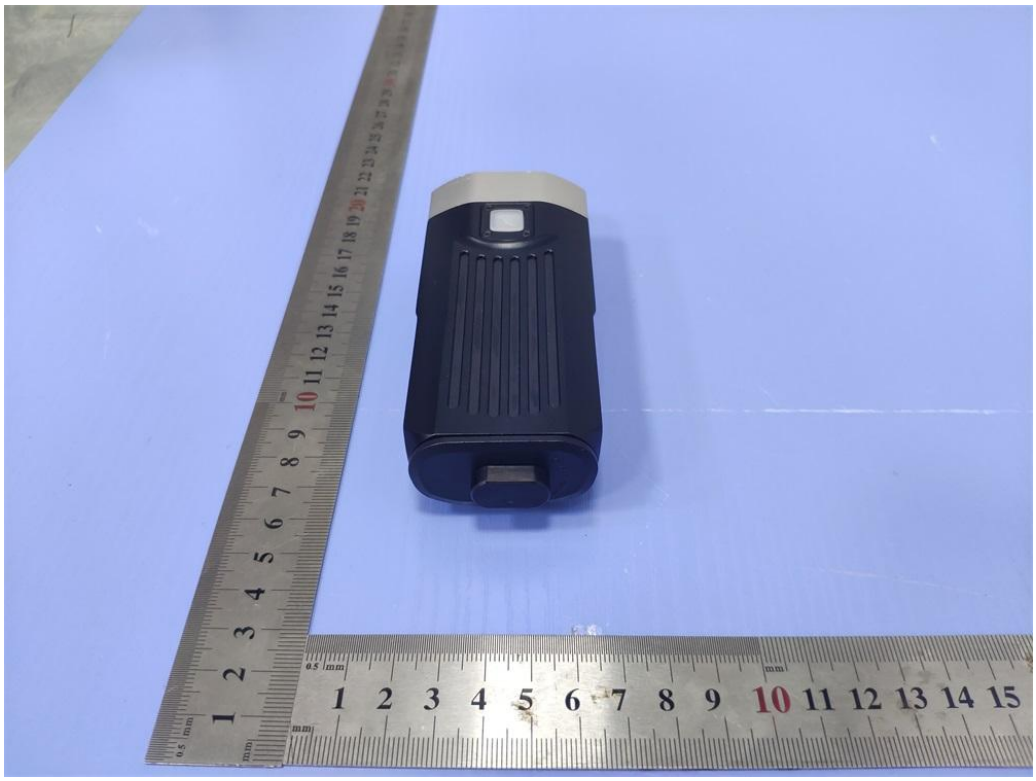


Fig. 3

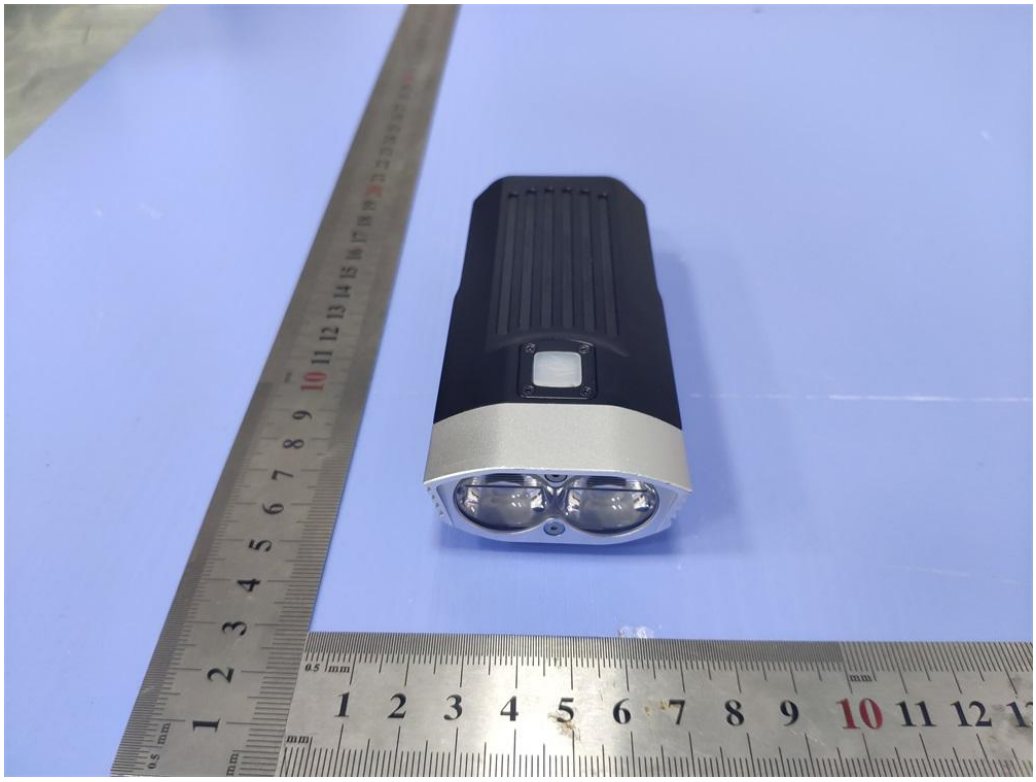


Fig. 4

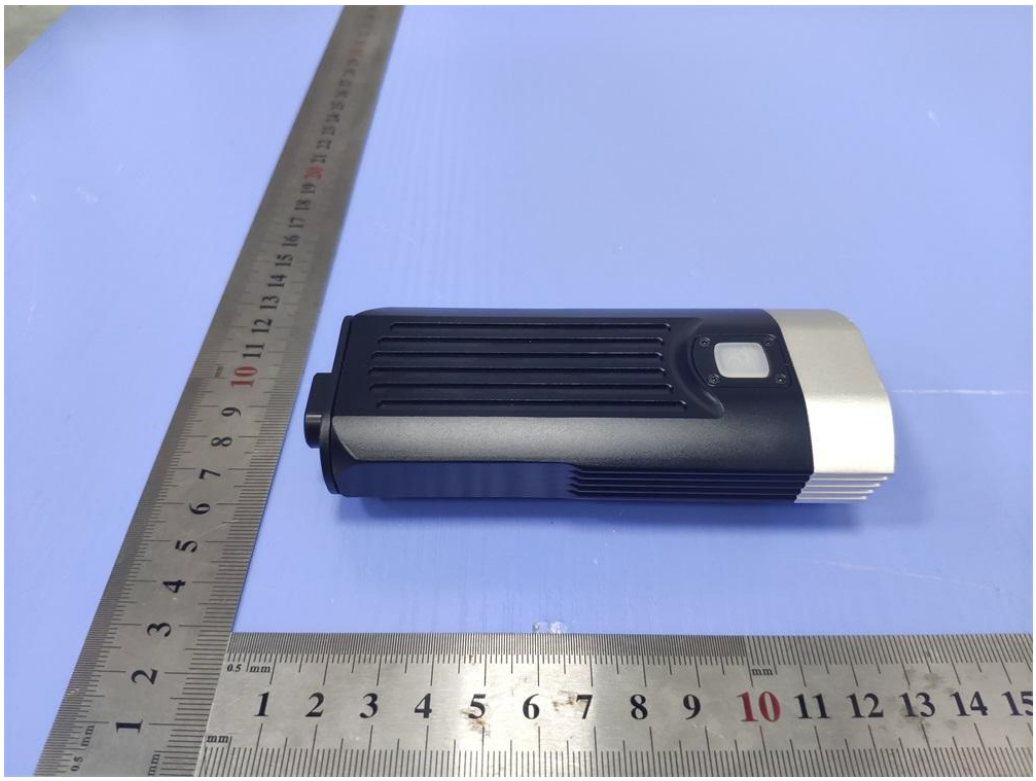


Fig. 5

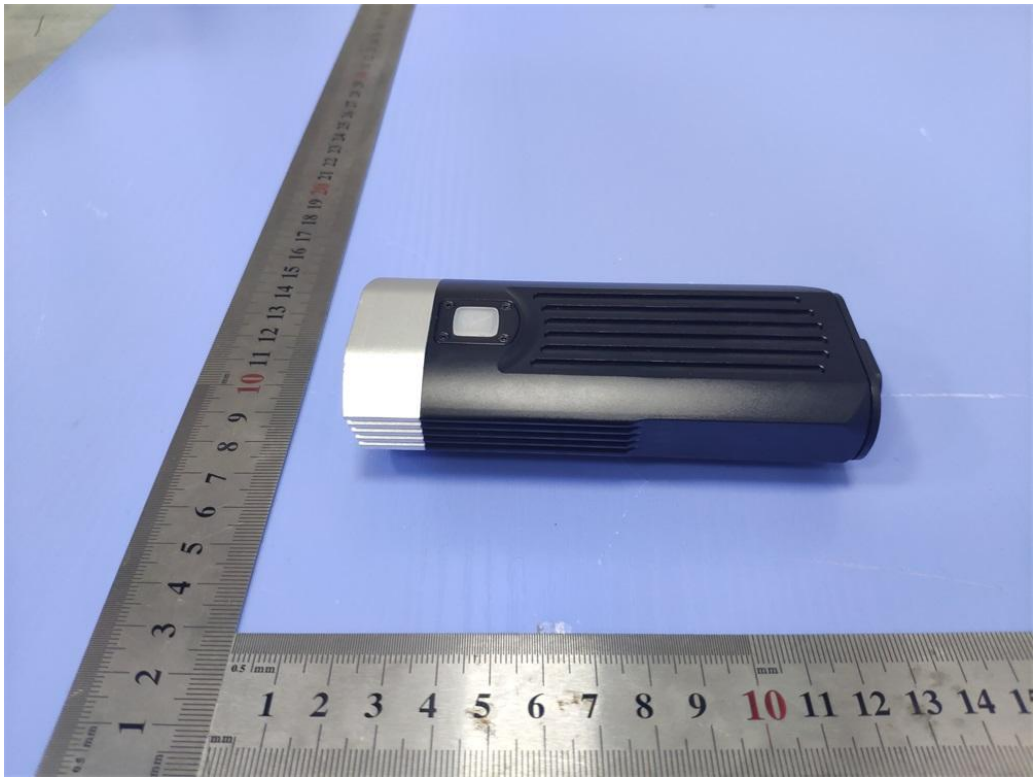


Fig. 6

Fig. 7

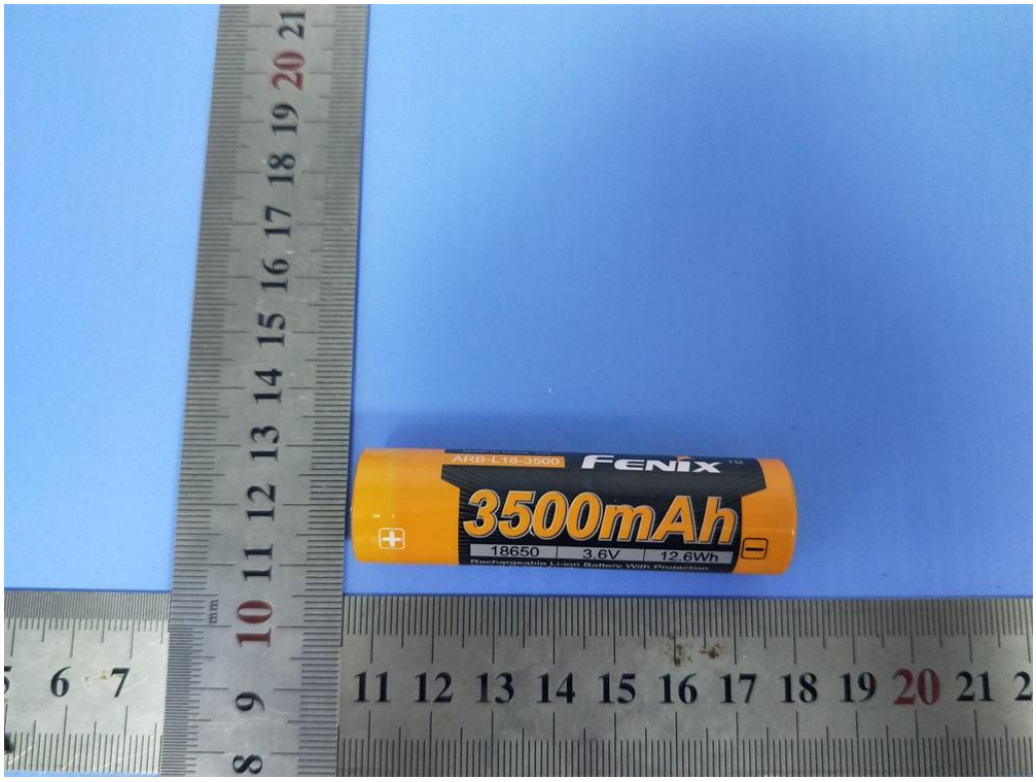


Fig. 8

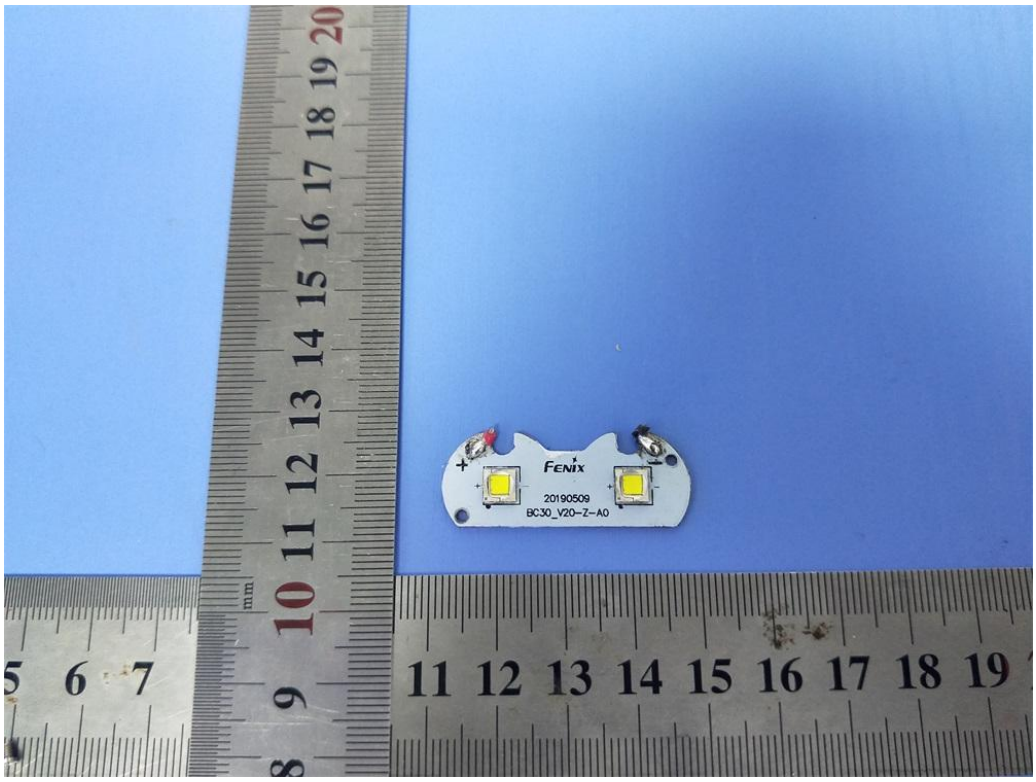


Fig. 9

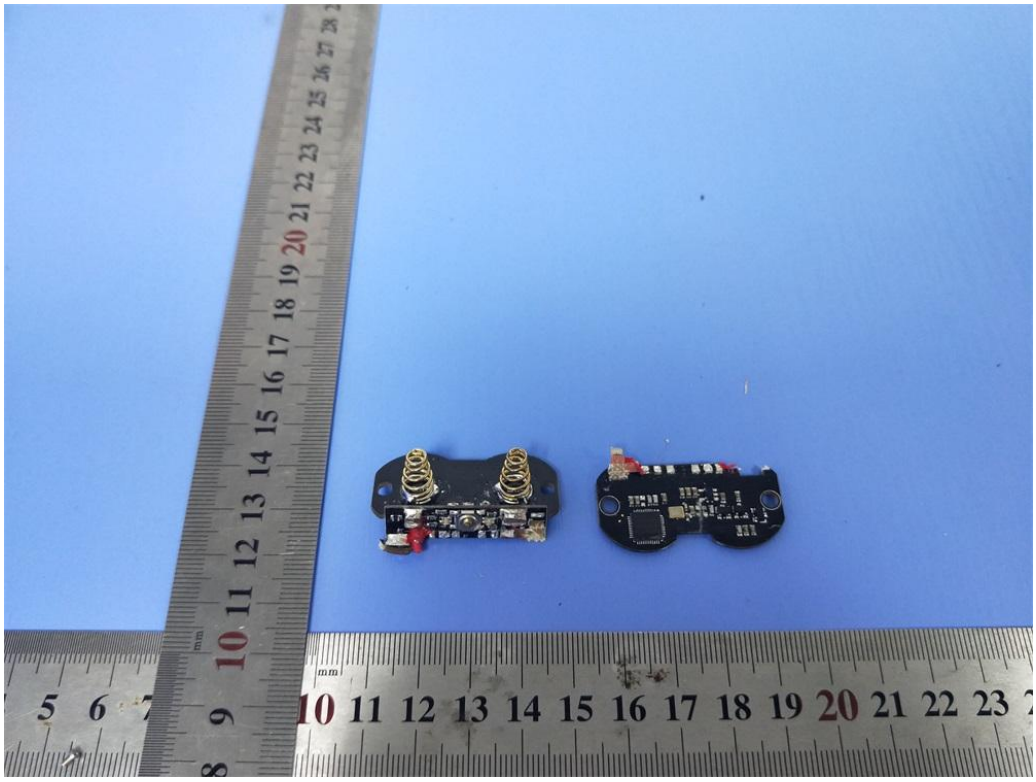


Fig. 10

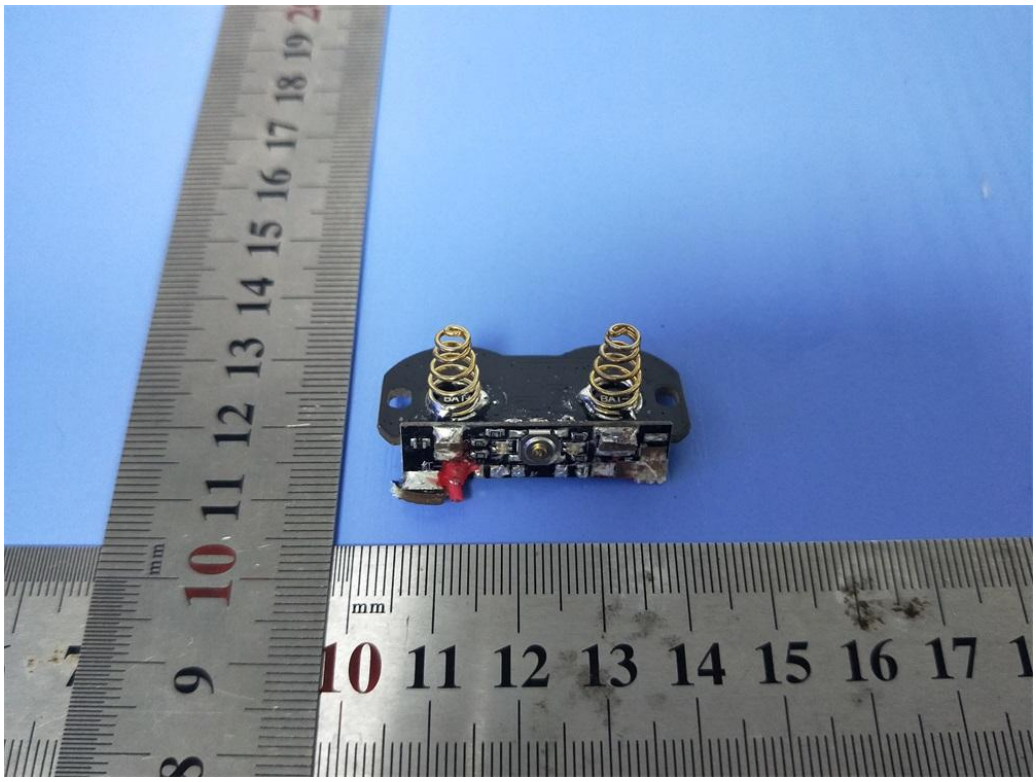


Fig. 11

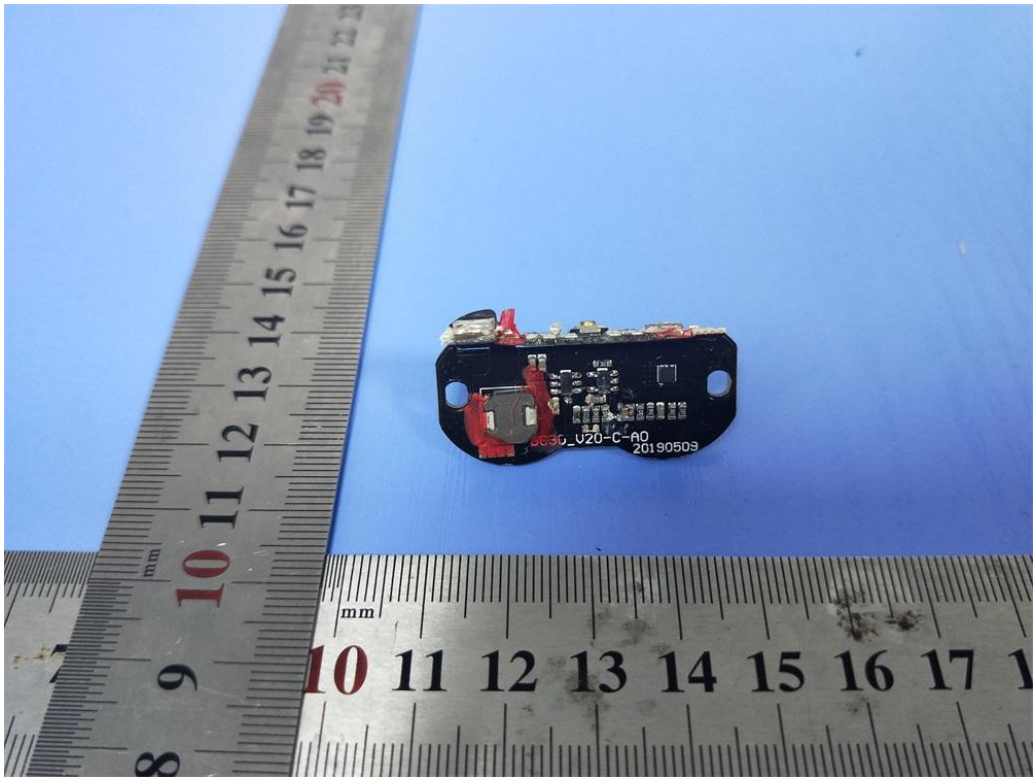


Fig. 12

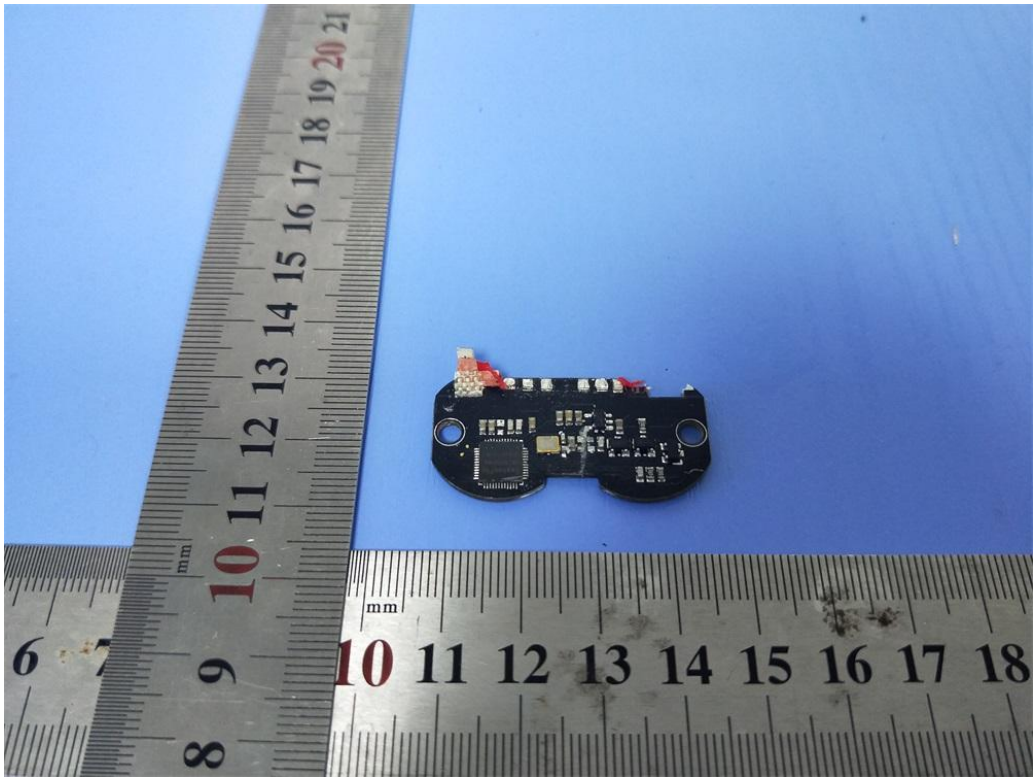


Fig. 13

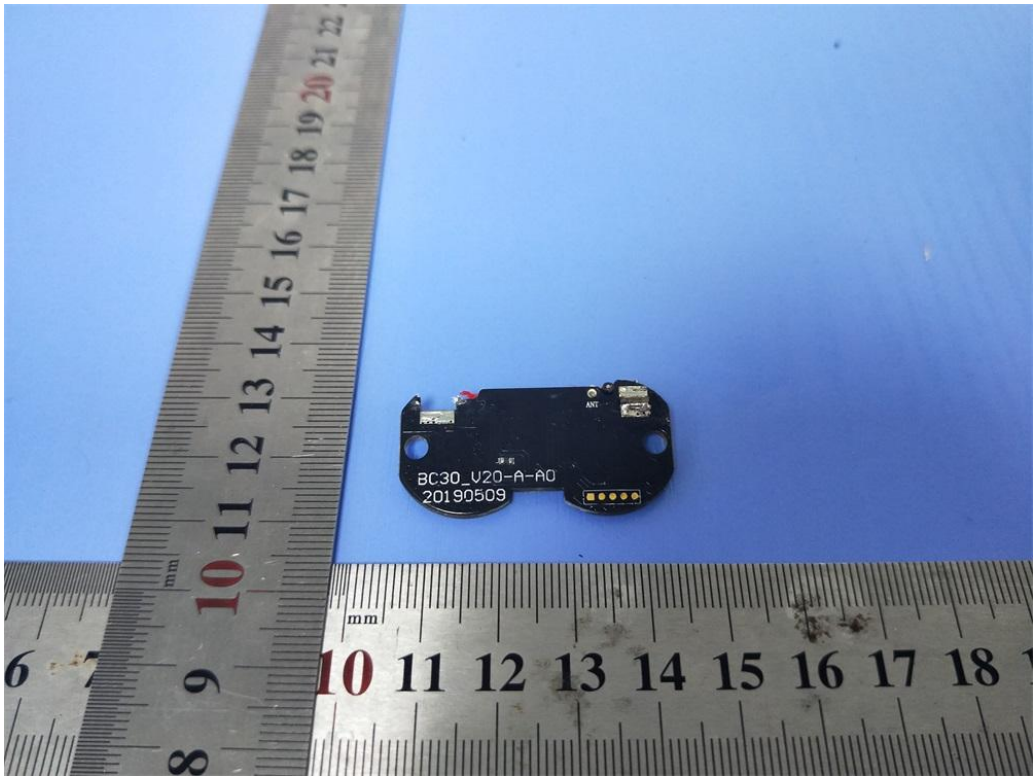


Fig. 14

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