

FCC 47 CFR PART 15 SUBPART B

TEST REPORT

Shenzhen HBC Electronic Technology Co., LTD

LED Multi-function flashlight

Model No.: F1

Prepared for	: Shenzhen HBC Electronic Technology Co., LTD
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Prepared by	: Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample	: May 28, 2018
Number of tested samples	: 1
Serial number	: Prototype
Date of Test	: May 28, 2018 ~ May 31, 2018
Date of Report	: June 01, 2018



FCC TEST REPORT

FCC 47 CFR PART 15 SUBPART B

Report Reference No. : LCS180528029AE

Date Of Issue : June 01, 2018

Testing Laboratory Name..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue,
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 HBC Electronic Technology Co., LTD

Address : Room #802-02, Block B, Building 2, Tianan Digital City, Long
Gang District, Shenzhen, China

Test Specification

Standard..... : FCC 47 CFR Part 15 Subpart B, ANSI C63.4 -2014

Test Report Form No...... : LCSEMC-1.0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF..... : Dated 2011-03

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Test Item Description..... : LED Multi-function flashlight

Trade Mark : HBC

Model/ Type Reference : F1

Ratings..... : DC 5V, 1A, 3.3W

Result : Positive

Compiled by:

Lylian Li

Supervised by:

Davey Xu



Lylian Li/ File administrators

Davey Xu/ Technique principal

Leo Lee/ Manager

FCC -- TEST REPORT**Test Report No. : LCS180528029AE**June 01, 2018

Date of issue

Type / Model..... : F1

EUT..... : LED Multi-function flashlight

Applicant..... : Shenzhen HBC Electronic Technology Co., LTDAddress..... : Room #802-02, Block B, Building 2, Tianan Digital City,
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Long Gang District, Shenzhen, China

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	June 01, 2018	Initial Issue	Leo Lee

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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 47 CFR Part 15 Subpart B	Class B	N/A
Radiated disturbance	FCC 47 CFR Part 15 Subpart B	Class B	PASS
N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : LED Multi-function flashlight

Trade Mark : HBC

Model Number : F1

Power Supply : DC 5V, 1A, 3.3W

EUT Clock Frequency : $\leq 15\text{MHz}$

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_{cisp})
Coucted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 4.0 dB ± 3.6 dB
Power disturbance	Level accuracynd (30MHz to 300MHz)	± 2.90 dB	± 4.5 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.60 dB	± 2.63 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	± 2.63 dB
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 2.63 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	N/A
Mains Harmonic	Voltage	$\pm 0.510\%$	N/A
Voltage Fluctuations & Flicker	Voltage	$\pm 0.510\%$	N/A
EMF		$\pm 21.59\%$	N/A

- (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%.

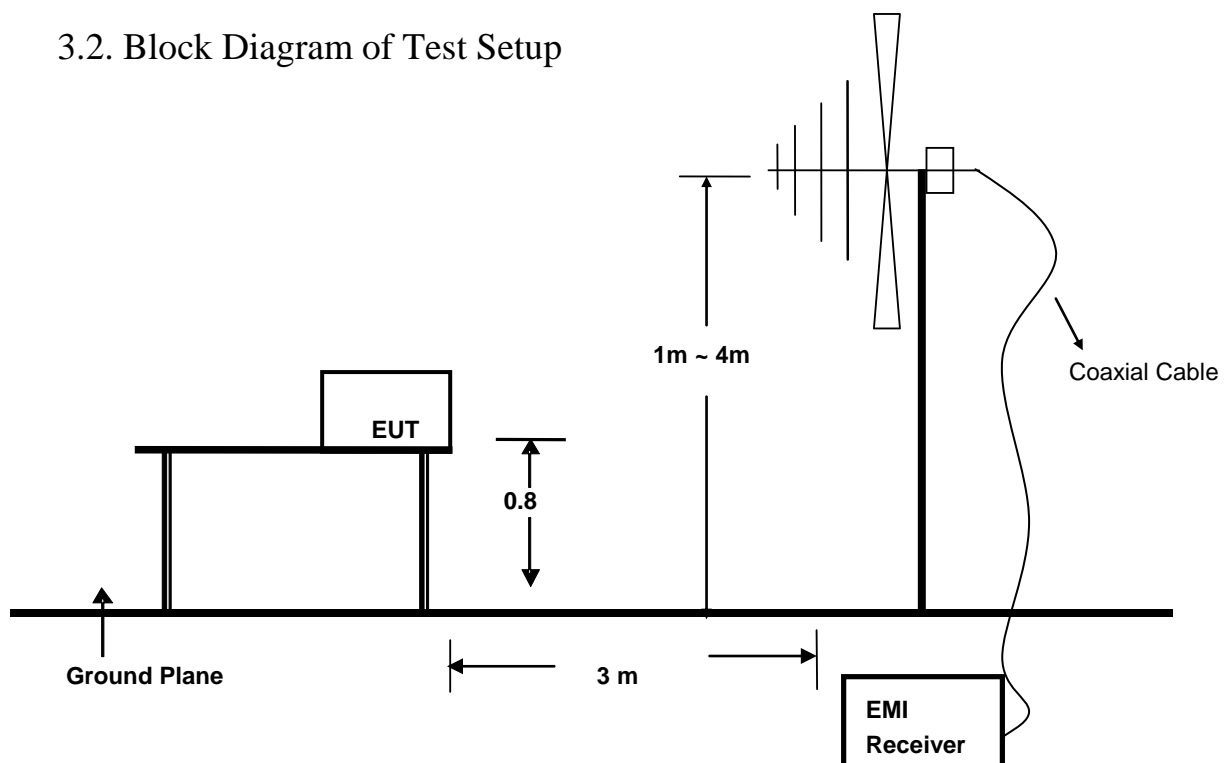
3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

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

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2017-06-17
2	EMI Test Receiver	ROHDE & SCHWARZ	ESR 7	101181	2017-06-17
3	By-Log Antenna	SCHWARZBECK	VULB9163	9163-470	2018-05-01
4	EMI Test Software	AUDIX	E3	N/A	2017-06-17
5	Positioning Controller	MF	MF-7082	/	2017-06-17

3.2. Block Diagram of Test Setup



3.3. Radiated Emission Limit (Class B)

Limits for radiated disturbance Blow 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
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 $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V}/\text{m}$
 (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.

3.4. 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.

3.5. 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 (on) and measure it.

3.6. 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 an 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, 1000kHz.

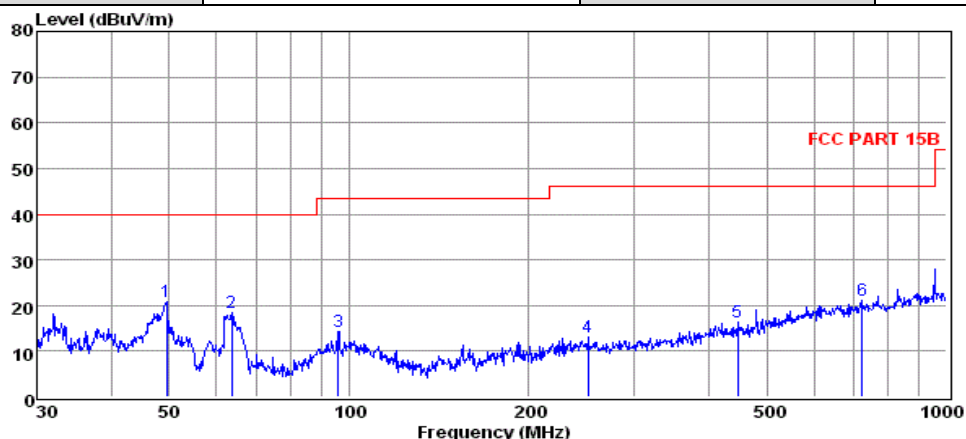
The frequency range from 30MHz to 1000MHz is checked.

3.7. Radiated Emission Noise Measurement Result

PASS.

The scanning waveforms please refer to the next page.

Model No.	F1	Test Mode	ON
Environmental Conditions	24.8°C, 53.1% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Daiwei Dai		



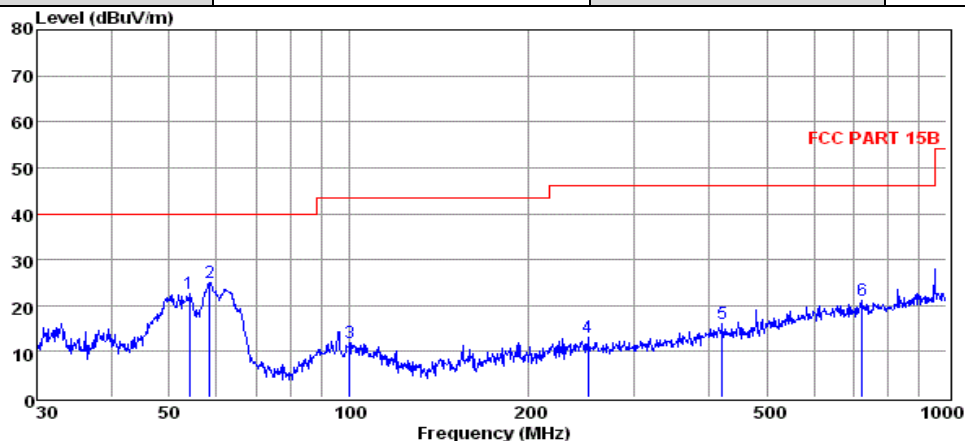
	Freq MHz	Reading dBuV	CabLos dB	Antfac dB/m	Measured dBuV/m	Limit dBuV/m	Over dB	Remark
1	49.53	6.88	0.54	13.28	20.70	40.00	-19.30	QP
2	63.54	6.79	0.48	11.29	18.56	40.00	-21.44	QP
3	95.76	0.84	0.58	12.89	14.31	43.50	-29.19	QP
4	251.18	0.07	1.02	12.07	13.16	46.00	-32.84	QP
5	447.98	-0.39	1.27	15.57	16.45	46.00	-29.55	QP
6	721.73	0.47	1.63	19.08	21.18	46.00	-24.82	QP

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that at 20db blow the official limit are not reported

Model No.	F1	Test Mode	ON
Environmental Conditions	24.8°C, 53.1% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Daiwei Dai		



	Freq MHz	Reading dBuV	CabLos dB	Antfac dB/m	Measured dBuV/m	Limit dBuV/m	Over dB	Remark
1	54.07	9.18	0.46	13.06	22.70	40.00	-17.30	QP
2	58.41	11.80	0.49	12.80	25.09	40.00	-14.91	QP
3	100.23	-1.72	0.60	13.14	12.02	43.50	-31.48	QP
4	251.18	0.07	1.02	12.07	13.16	46.00	-32.84	QP
5	422.06	-0.89	1.33	15.48	15.92	46.00	-30.08	QP
6	721.73	0.47	1.63	19.08	21.18	46.00	-24.82	QP

Note: 1. All readings are Quasi-peak values.

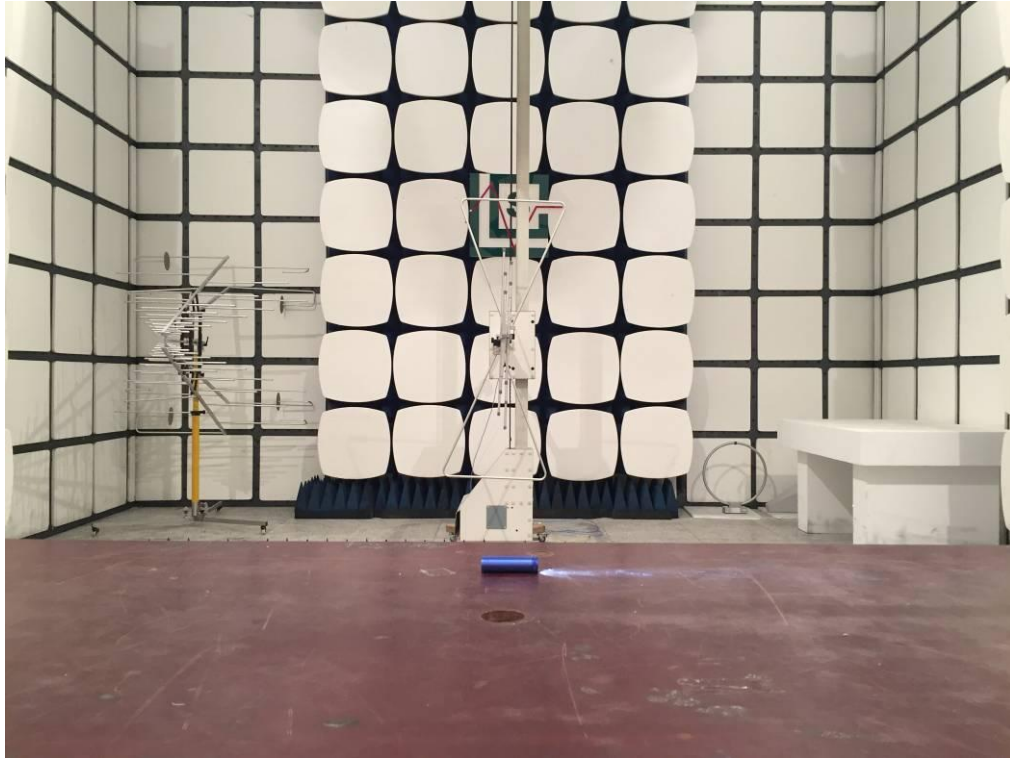
2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that at 20db blow the official limit are not reported

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

4. PHOTOGRAPH

4.1. Photo of Radiated Measurement



5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

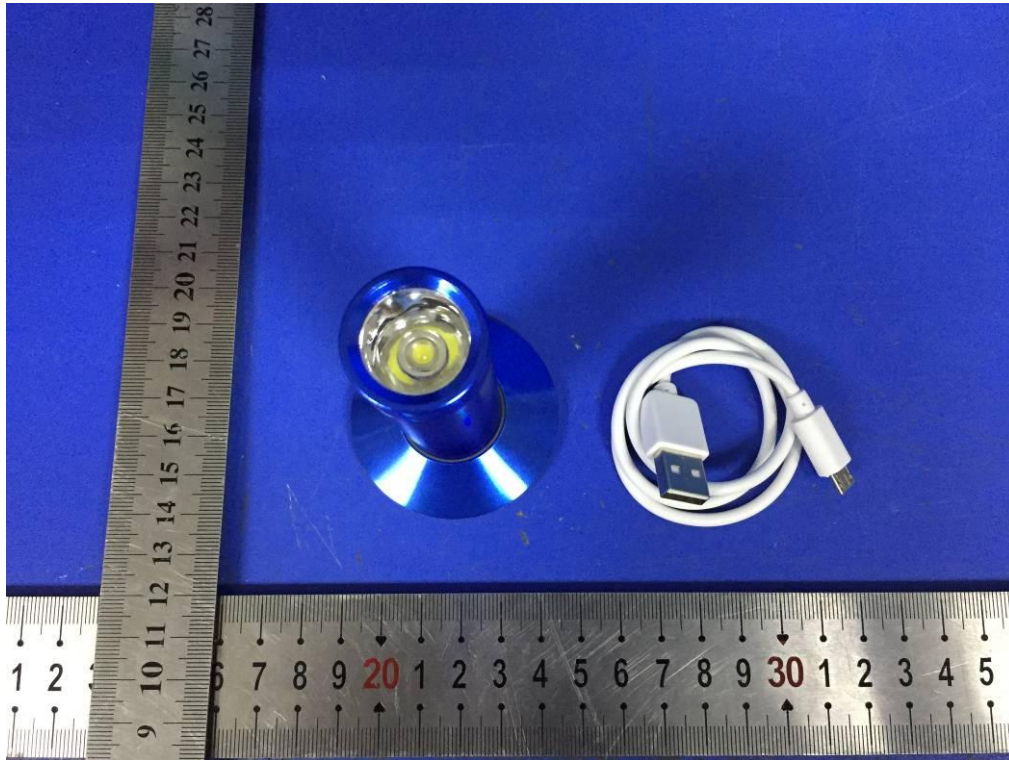


Fig. 1

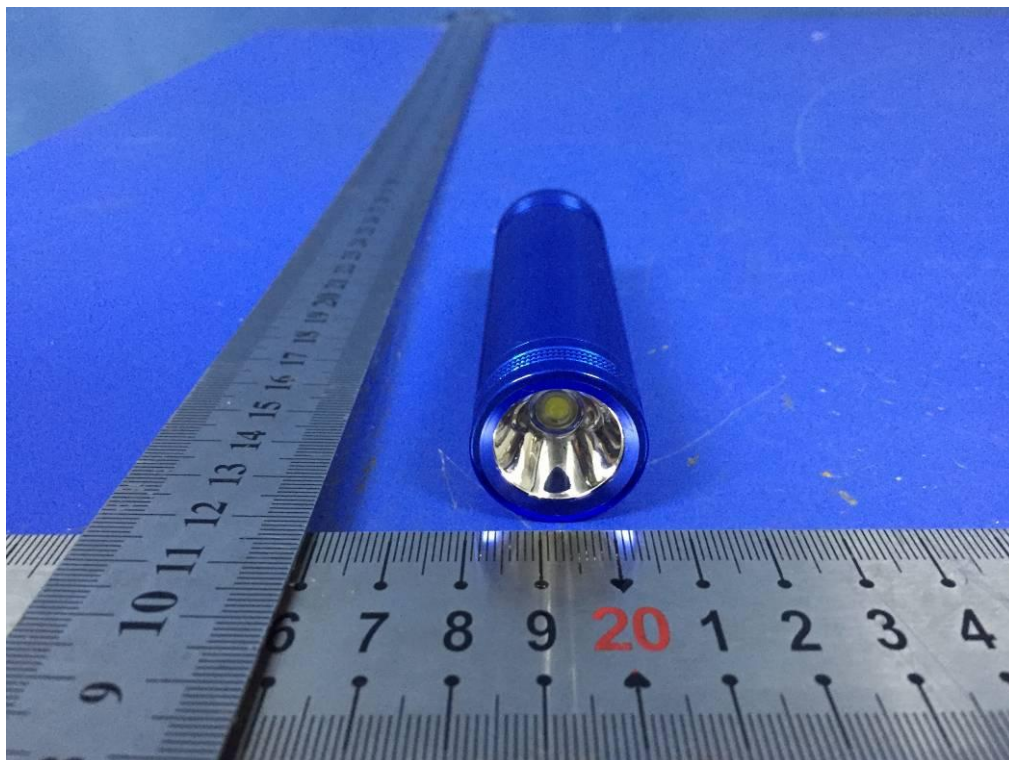


Fig. 2

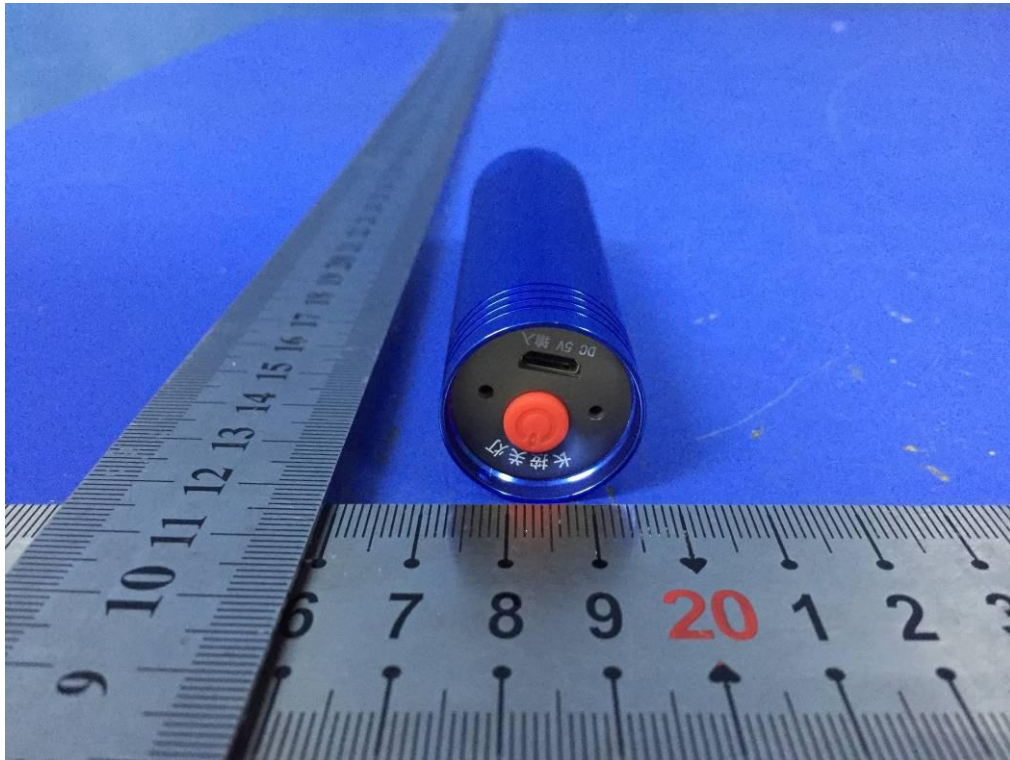


Fig. 3

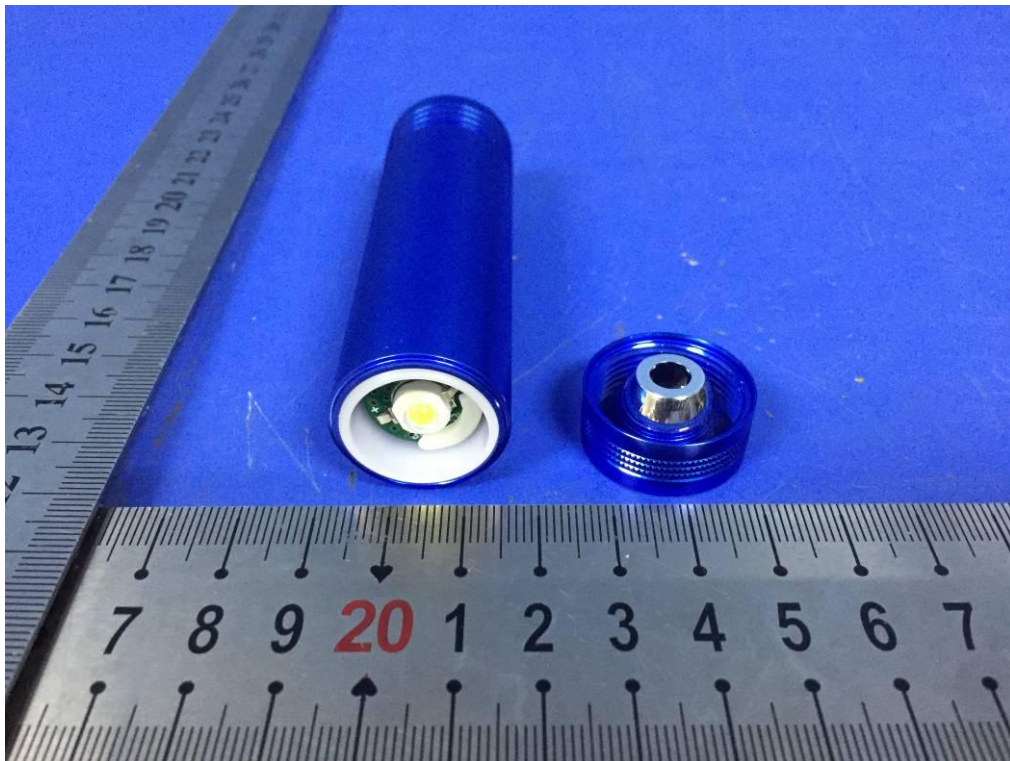


Fig. 4

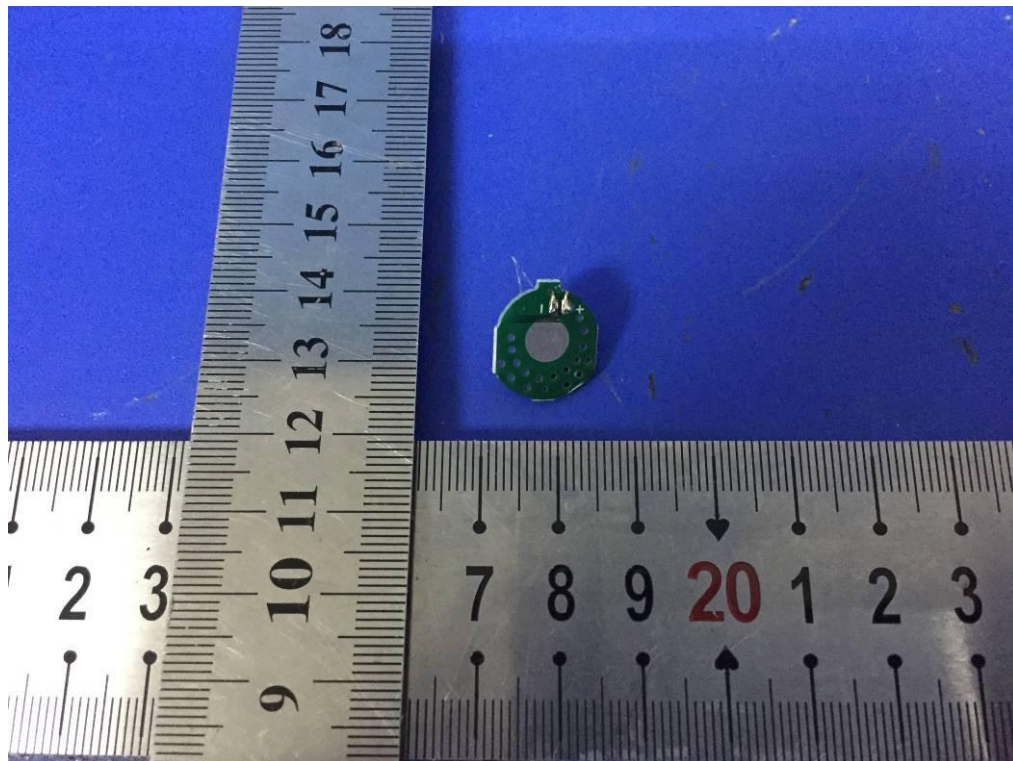


Fig. 5

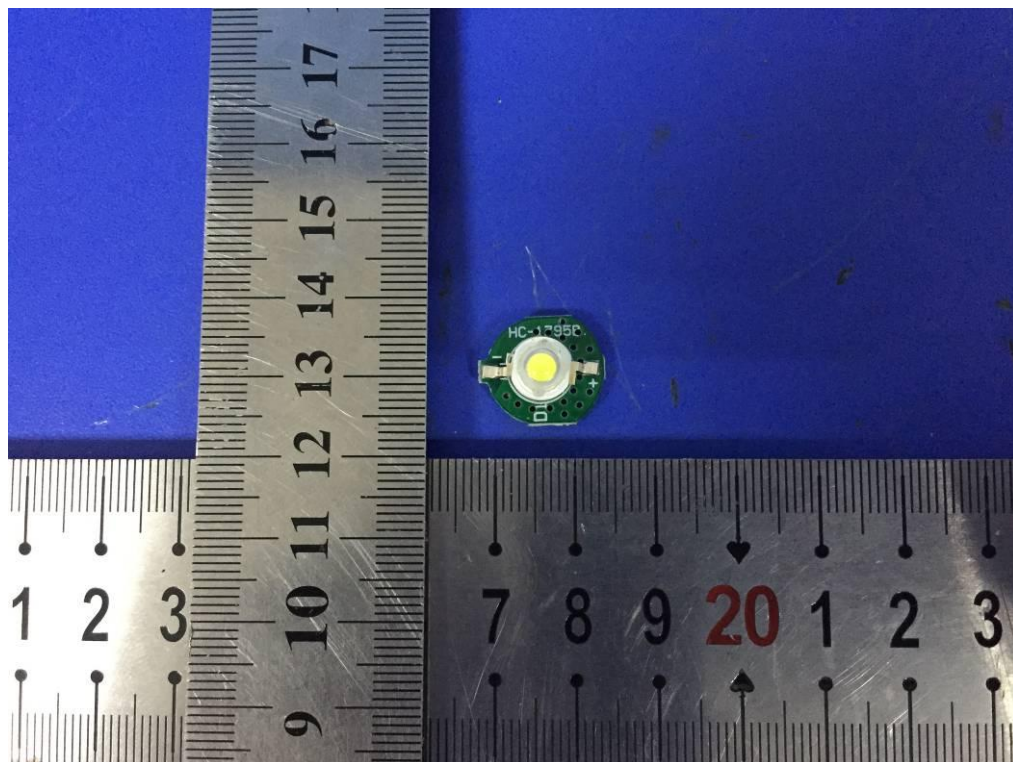


Fig. 6

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