



Yongyue Cai  
 Ningbo Linch Toys Manufactory Co Ltd  
 No 23 Xinyuan No.1 RD,Ninghai  
 Ningbo  
 Zhejiang 315040 CHINA

Date: 2016/01/10  
 Subscriber: None  
 PartySite: 1515022  
 File No: MH61176  
 Project No: 4787162407  
 PD No: 16M01278  
 Type: R  
 PO Number:

Subject: **Initial Production Inspection**

**PLEASE NOTE: YOU ARE NOT AUTHORIZED TO SHIP ANY PRODUCTS BEARING ANY UL MARKS UNTIL THE INITIAL PRODUCTION INSPECTION HAS BEEN SUCCESSFULLY CONDUCTED BY THE UL FIELD REPRESENTATIVE.**

**An Initial Production Inspection (IPI) is an inspection that must be conducted prior to the first shipment of products bearing the UL Mark. This is to ensure that products being manufactured are in accordance with UL's requirements including the Follow-Up Service Procedure. After the UL Representative has verified compliance of your product(s), authorization will be granted for shipment of product(s) bearing the appropriate UL Marks as denoted in the Procedure.**

Inspections at your plant will be conducted under the supervision of CHUANGQI LOU, UL INSPECTION CENTER HANGZHOU, CHINA NAT'L IMPORT & EXP COM INSP CORP, YAOJIANG DEVELOPING CENTER, 9TH FL, 305 HUANCHENG NORTH RD, HANGZHOU, ZHEJIANG, China, 310012., PHONE: +86-571-8578-6148, EMAIL: hzic@cciczhejiang.com

Marks as needed may be obtained from UL LABEL CENTER GUANGZHOU, ROOM 3006-3007, TIMES PROPERTY CENTER, NO 410 DONGFENG RD MIDDLE, GUANGZHOU, GUANGDONG, China, 510030. PHONE: 208-348-7088, FAX: 208-348-7088, EMAIL: LABELCENTER.GUZ@CN.UL.COM, ATTN: T WEN

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

Please review this material and report any inaccuracies to UL's Customer Service Professionals. Contact information for all of UL's global offices can be found at <http://ul.com/aboutul/locations>.

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SUZ File

UL INSPECTION CENTER 325

Production Date: UNKNOWN  
 Contact: Yongyue Cai  
 Phone: 86-574-87371919  
 EMail: charles@leaderpremiums.com

ADDENDUM TO TRANSMITTAL LETTER

Yongyue Cai  
Ningbo Linch Toys Manufactory Co Ltd  
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The following material resulting from the investigation under the above numbers is enclosed.

**Issue**

<u>Date</u>	<u>Vol</u>	<u>Sec</u>	<u>Pages</u>	<u>Revised Date</u>
2016/01/07	1	1	Cert of Compliance	
2016/01/07	1	1	Add New Volume	

# Follow-Up Service Procedure

## DO NOT DISCARD THIS PAGE

**It is important to keep UL Procedures and Test Reports up-to-date as new or revised pages are received. Correct maintenance will decrease the amount of time the UL Representative spends when visiting your facility.**

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PAGES (in content order)	FUNCTION	HOW TO UPDATE
<b>Authorization Page</b>	Displays the Product Category, the type of Follow -Up Service (Type R=Reexamination / Type L=Label), the File Number and the Volume Number associated with each Applicant's, Manufacturer's and Listee's company name and address.	Replace existing page by matching the UL File Number and Volume Number. Discard the older page (refer to "Issued" or "Revised" date).
<b>Addendum to Authorization Page*</b>	Lists the additional names and addresses of manufacturing locations, when multiple locations exist	Replace existing page by matching the UL File Number and Volume Number. Discard the older page (refer to "Issued" or "Revised" date).
<b>Listing Mark Data (LMD), Classification Mark Data (CMD) or Recognized Component Mark Data (RCMD) Pages * #</b>	Used only for products covered under Type R Service. Displays the correct LMD, CMD, or RCMD Mark, the Control Number for Listed and Classified categories and additional information regarding minimum size, application, procurement, and any other optional markings, in addition to the UL Mark.	Replace existing page by matching the UL File Number and Volume Number. Discard the older page (refer to "Issued" or "Revised" date).
<b>Multiple Listing (ML) Correlation Sheet</b>	Correlates product model numbers between those products made by a Manufacturer for the Basic Applicant and those supplied to another company, the Multiple Listee.	Replace, add or delete page(s) with most current "Issued" or "Revised" date.
<b>Index *</b>	Catalogs the contents of the Procedure by some logical means, i.e. Section Number, Report Reference Number, or Issue Date.	Replace present page by matching the UL File Number, Volume Number, Page Number and most current "Revised" date.
<b>Appendices * # (App.)</b>	Contains instructions for the Manufacturer and UL Representative concerning specific responsibilities and required periodic tests. May also outline tests to be conducted on samples to be forwarded to UL's facilities.	Replace present page by matching the UL File Number, Volume Number, Appendix letter (eg. App. A), Page Number and most current "Revised" date.
	Standardized Appendix Pages are the same for all manufacturers within a particular product category.	Replace present page by matching the Appendix letter (eg. App. A), Page Number and most current "Revised" date.
<b>Follow-Up Inspection Instructions (FUII) Pages *</b>	Contains information similar to that in the Appendices. FUII Pages are issued as part of the Procedure when a UL Standard is used in conjunction with the Procedure, and are the same for all manufacturers within a particular category.	Replace present pages by matching the Page Number and most current "Issued" or "Revised" date.
<b>Section General * # (Sec. Gen.)</b>	Contains description, requirements, identifications and/or specifications that are common to all products covered by the entire volume and supplements the information provided in the Description Section.	Replace present page by matching the UL File Number, Volume Number, Page Number and most current "Revised" date.
<b>Description, or Section (Sec.) *</b>	Contains the specific description of one or more products or systems. This includes written text supplemented by photographs, drawings, etc., as necessary, to define features that affect compliance with the applicable requirements.	Replace present page by matching the UL File Number, Volume Number, Section Number, Page Number and most current "Issued" date.

\* The above page(s) may not appear in all UL Follow -Up Service Procedures; UL's Conformity Assessment Services staff determines their inclusion.

# These pages are combined in the **Generic Inspection Instructions** for International Style Reports, identified, as example by Vol. X1, X2, etc.

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FOLLOW-UP SERVICE PROCEDURE  
(TYPE R)

BATTERIES, HOUSEHOLD AND COMMERCIAL  
(BBFS)

Manufacturer: SEE ADDENDUM FOR MANUFACTURER LOCATIONS

Applicant: 1515022 (Party Site)  
Ningbo Linch Toys Manufactory Co Ltd  
No 23 Xinyuan No.1 RD,Ninghai  
Ningbo  
Zhejiang 315040 CHINA

Listee/Classified Co.: 1515022 (Party Site)  
SAME AS APPLICANT

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party and any applicable Service Terms. The UL Contracting Party for Follow-Up Services is listed on addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

UL further defines responsibilities, duties and requirements for both Manufacturers and UL representatives in the document titled, "UL Mark Surveillance Requirements" that can be located at the following web-site: <http://www.ul.com/fus> and in the document titled "UL and Subscriber Responsibilities" that can be located at the following website: <http://www.ul.com/responsibilities>. Manufacturers without Internet access may obtain the current version of these documents from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of these documents or the applicable Service Terms, please contact UL's Customer Service at <http://ul.com/aboutul/locations/>, select a location and enter your request, or call the number listed for that location.

The Applicant, the specified Manufacturer(s) and any Listee/Classified Co. in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable agreement is a Global Services Agreement ("GSA") with an effective date of January 1, 2012 or later and this Follow-Up Service Procedure is issued on or after that effective date, the Applicant, the specified Manufacturer(s) and any Listee/Classified Co. will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of use of the prescribed UL Mark, acceptance of the factory inspection, or payment of the Follow-Up Service fees which will incorporate such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking here: <http://www.ul.com/contracts/Terms-After-12-31-2011>. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

It is the responsibility of the Listee/Classified Co. to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

This Follow-Up Service Procedure contains information for the use of the above Manufacturer(s) and representatives of UL and is not to be used for any other purpose. It is provided to the Manufacturer with the understanding that it will be returned upon request and is not to be copied in whole or in part.

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the above named Manufacturer(s) and representatives of UL and is not to be used for any other purpose. It is provided to the Subscribers with the understanding that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

UL LLC has signed below solely in its capacity as the accredited entity to indicate that this Follow-Up Service Procedure is in compliance with the accreditation requirements.

Bruce A. Mahrenholz  
Director  
North American Certification Program

LOCATION

1515022 (Party Site)  
Ningbo Linch Toys Manufactory Co Ltd  
No 23 Xinyuan No.1 RD,Ninghai  
Ningbo  
Zhejiang 315040 CHINA

Factory ID: None  
UL Contracting Party for above site is: UL AG

## Listing Mark Data Page (LMDP)

(FILE IMMEDIATELY AFTER AUTHORIZATION PAGE)

LISTING MARK

The Listing Mark consists of four elements placed in close proximity and shall appear on Listed products only. Minimum size is not specified, as long as the Listing Mark is legible. The following is suggested.



XXXX = The control number assigned by UL, MH61176 .

The minimum height of the registered trademark symbol ® shall be 3/64 of an inch. When the overall diameter of the UL Mark is less than 3/8 of an inch, the trademark symbol may be omitted if it is not legible to the naked eye.

The product identity is: "NICKEL, CADMIUM BATTERY, ALKALINE BATTERY" or appropriate product identities, as shown in the individual Listing.

The product identity may be omitted if the Mark is directly and permanently applied to the product by stamping, molding, ink-stamping, silk screening or similar process. The product identity may appear elsewhere on the product if the other three elements are part of the nameplate which includes the rating or the catalog or model designation.

Separable Listing Mark (not part of a nameplate and in the form of decals, stickers or labels) will always include the four elements.

The complete four element Listing Mark will appear on the smallest unit container in which the product is packaged when the product is of such a size that only the UL Symbol can be applied to the product or when the product size, shape, material or surface texture makes it impossible to apply any legible marking to the product.

The manufacturer may reproduce the Mark or obtain it from a UL authorized supplier.

THIS PAGE IS TO BE REVISED BY FUS DEPARTMENT ONLY

## INDEX

Product Description/Model	Section	Requirements Evaluated to (US and/or CN)
Rechargeable Li-ion battery power bank, models: 98803, 98815, 98804, 98821, 20857, 28128, 88853, 10239, 10234, 99819, 98817, 28126	1	US



ISSUED: 2014-04-14

STANDARDIZED APPENDIX PAGES  
Subject 2054

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BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS)  
COMPONENT - BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS2, BBFS3)

STANDARDIZED APPENDIX PAGES

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BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS)  
COMPONENT - BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS2, BBFS3)

APPENDIX A - FIELD REPRESENTATIVE'S RESPONSIBILITIES

GENERAL

The Field Representative's general responsibilities, as part of the Follow-Up Services Procedure, are as noted in the published document titled, "UL Mark Surveillance Requirements", and is available through UL's secure customer portal MyHome@UL.com and/or through UL's internet site www.UL.com. Manufacturers that do not have Internet access may obtain the current version of these requirements from their local UL Customer Service Representative or UL Field Representative.

PROCEDURE IN THE EVENT OF NONCONFORMANCE

When a product does not comply with the Follow-Up Service Procedure, require that the manufacturer implement appropriate action as outlined in the "UL Variation Notice and Corrective Action Requirements" document, which can be found at [www.ul.com/fus](http://www.ul.com/fus).

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APPENDIX B - INSTRUCTIONS FOR FIELD REPRESENTATIVE'S SAMPLE SELECTION

GENERAL

Referring to Sp. App. B, Table A. Within each calendar year and for each sample group, select either the number of battery pack models indicated in the No. Per Group Per Year (#/Group/Year) column, or the number in that group which are available during inspection visits, whichever is lesser.

Unless specifically requested, a battery pack model shall only be selected once each year.

If it is not possible to select the required number of battery pack models for a given calendar year due to production schedules, continue with the sample selection per Sp. App. B, Table A when inspection visits resume the following year. Do not select multiple samples of the same model to fulfill the #/Group/Year requirement.

SAMPLES FOR THE TESTING OFFICE

The Field Representative is responsible for selecting the appropriate battery pack models for Follow-Up testing as indicated above. For each battery pack model selected, the sample requirements and FUS Test Program are indicated in code, in the Test Program Code column in Sp. App. B, Table A. Specific details regarding the Test Program Codes are contained in Table B below, including quantity and form of samples, and the required test program.

TABLE B - TEST PROGRAM CODES

Test Program Code	Tests Required	Samples Required
A	Open Circuit Voltage Measurement, Short Circuit Test	2 complete samples with unsealed enclosures
B	Abusive Over Charge Test, Short Circuit Test	2 complete samples with unsealed enclosures
C	Abnormal Charging Test, Short Circuit Test	2 complete samples with unsealed enclosures
D	Drop Impact Test	3 complete samples with sealed enclosures
E	Projectile Test	10 component cell samples
F	3/4-Inch Flame Test	6 enclosure samples

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The required samples are to be identified and tagged with the applicable information using a Sample Tag (Form 3000-217). Information shall include: Model number and capacity, and date and lot of production. If the same model is allowed to have multiple constructions/ratings, the key parameter(s) that could be used to identify the specific constructions/ratings being selected shall be documented on the tag. Examples of key parameters are Capacity or Cell Source, which could normally be found in Sp. App. C, Table C. Unless otherwise stated, the Field Representative shall inform the manufacturer that the samples are to be forwarded to the Test Office(s) as designated on the specific service profile.

BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS)  
COMPONENT - BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS2, BBFS3)

APPENDIX C - INSTRUCTIONS FOR FOLLOW-UP TESTS AT UL

GENERAL

The samples forwarded to UL in accordance with Appendix B shall be subjected to the tests indicated through the Test Program Code in Table A of Special Appendix B. Tests are to be conducted in accordance with the current edition for Household and Commercial Batteries, UL 2054, unless specifically indicated otherwise.

OPEN CIRCUIT VOLTAGE MEASUREMENT: (FOR PRIMARY BATTERY PACKS ONLY)

METHOD

The open circuit voltage of each primary model pack was measured using a direct-current voltmeter and compared to its specified open circuit voltage as indicated in Table C of Sp. App. C.

BASIS FOR ACCEPTABILITY

The measured voltage was within the tolerances of the manufacturer's specified open circuit voltage.

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SHORT CIRCUIT TEST (At  $55^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ):

#### METHOD

For a primary battery pack, one as-received sample was used for this test. For a secondary battery pack, one fully charged sample was used. It was charged in accordance with the top-off parameters as indicated in Table C of Sp. App. C.

The sample was short-circuited by connecting the positive and negative terminals to a circuit having a maximum resistance of 0.1 ohm. The sample was discharged until a fire or explosion was obtained, or until it had reached a completely discharged state less than 0.2 volts and/or the internal cell case temperatures ( $T_{\text{max}}$ ) had returned to  $+10^{\circ}\text{C}$  of ambient temperature.

Tests were conducted at  $55^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , and the sample reached equilibrium at  $55^{\circ} \pm 5^{\circ}\text{C}$  before the terminals were connected.

The sample was not subjected to single faults across any electrical protective device during this test.

#### BASIS OF ACCEPTABILITY

There was no fire or explosion. The maximum temperature on the internal cell casings ( $T_{\text{max}}$ ) did not exceed  $150^{\circ}\text{C}$ .

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ABUSIVE OVER CHARGE TEST: (FOR SECONDARY BATTERY PACKS ONLY)

#### METHOD

One fully charged sample was used for this test. It was charged in accordance with the top-off parameters as indicated in Table C of Sp. App. C.

The sample was tested in an ambient temperature of  $20 \pm 5^{\circ}\text{C}$  ( $68 \pm 9^{\circ}\text{F}$ ). The room ambient temperature,  $T_{\text{amb}}$ , was recorded.

The sample was then discharged at a constant current rate of  $0.2\text{C}/1$  hour to the manufacturer specified discharge endpoint voltage, as indicated in Table C of Sp. App. C.

The sample was subjected to a constant charging current at 10 times the  $\text{C}_5$  amp rate (2 times the Capacity in Ah) using a supply voltage sufficient to maintain the charging rate through the duration of the test. A thermocouple was attached to the outer enclosure of the sample. The test was continued until the battery exploded or vented, or the temperature of the outer battery casing reached a steady state condition or returned to ambient.

#### BASIS OF ACCEPTABILITY

The sample did not explode or catch fire.



BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS)  
COMPONENT - BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS2, BBFS3)

ABNORMAL CHARGING TEST: (FOR SECONDARY BATTERY PACKS NOT SUBJECTED TO THE ABUSIVE OVERCHARGE TEST)

#### METHOD

Secondary battery pack samples not subjected to the preceding Abusive Over Charge Test are to be subjected to the Abnormal Charging Test as outlined below.

One fully charged sample shall be used for this test. It was charged in accordance with the top-off parameters as indicated in Table C of Sp. App. C.

The sample was tested in an ambient temperature of  $20 \pm 5^{\circ}\text{C}$  ( $68 \pm 9^{\circ}\text{F}$ ). The room ambient temperature,  $T_{\text{amb}}$ , was recorded. A thermocouple was attached to the casing of internal cells to monitor temperatures in order to determine ultimate results.

The sample was discharged at a constant current rate of 0.2C/1 hour to the manufacturer specified discharge endpoint voltage, as indicated in Table C of Sp. App. C.

The sample was subjected to the following overcharge condition:

It was charged with a constant maximum specified charger output voltage and a current limit of three times the maximum charging current  $I_c$ , specified by the manufacturer and as indicated in Table C of Sp. App. C. The charging duration was to be the time required to reach the manufacturer's specified end-of-charge conditions and ultimate results had occurred.

Ultimate results were assumed to have occurred with one of the following:

1. The sample had reached the manufacturer's specified end-of-charge conditions and the internal cell case temperatures to have stabilized or returned to within 10 degrees of ambient temperature; or
2. The sample caught on fire or exploded.

The sample was not to be subjected to single fault condition.

#### BASIS OF ACCEPTABILITY

As a result of the testing, there was no fire or explosion. There was no rupture, bursting or cracking of internal cell casing(s) resulting in chemical leakage.

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DROP IMPACT TEST: (FOR BATTERY PACKS WITH ENCLOSURES OR PREVIOUSLY TESTED):

#### METHOD

For a primary battery pack, three complete, as-received samples were subjected to this test. For a secondary battery pack, three complete, fully charged samples were subjected to this test. They were charged in accordance with the top-off parameters as indicated in Table C of Sp. App. C.

The test was performed in an ambient of  $20^{\circ} \pm 5^{\circ}\text{C}$ .

Each of three samples was dropped from height of  $1\text{ m} \pm 0.005\text{ m}$  so it strikes a concrete surface in the position that was most likely to produce adverse results (i.e. on corners or any sides or parts that may appear less robust). Each sample was dropped three times hitting a different location each time.

The samples were then examined for signs of damage to the enclosure that would damage or expose cells or protective parts, and for signs of fire or explosion as a result of the drops, a minimum of 2 hours but no more than 6 hours after conducting the testing.

Note: If damage to internal cells and protective parts was suspected, the sample enclosure was opened after the minimum 2 hour time to review the condition of its contents. Examples of damage would be dented or punctured cells and broken connections, etc. as a result of the drops.

#### BASIS OF ACCEPTABILITY

As a result of the drops, the samples did not explode or catch fire. The enclosures did not crack or become otherwise damaged to the extent that the cells or any protective devices were exposed or damaged.

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COMPONENT - BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS2, BBFS3)

PROJECTILE TEST: (FOR CELLS ONLY):

#### METHOD

Note: This test was not conducted on battery packs that employ Recognized cells subjected to this test as part of the cell Recognition and follow up service testing.

Five of the 10 fully charged samples of the component cells were subjected to this test. Secondary cells were charged in accordance with the top off parameters as indicated in Table C of Sp. App. C before being subjected to the projectile test.

As shown in Figure 1, each cell samples was placed on a screen that covered a 102 mm (4 inch) diameter hole in the center of a platform table. The screen was constructed of steel wire mesh having 20 openings per inch (25.4 mm) and a wire diameter of 0.017 in. (0.43 mm). The screen was mounted 38 mm (1-1/2 inch) above a burner. The fuel and airflow ratios were set to provide a bright blue flame that caused the supporting screen to glow a bright red.

An eight-sided covered wire cage, 610 mm (2 feet) across and 305 mm (1 foot) high, made from metal screening was placed over the test sample as shown in Figure 1. The metal screening was constructed from 0.25 mm (0.010 inch) diameter aluminum wire with 16-18 wires per inch (25.4 mm) in each direction. The aluminum screening was free from holes and secured tautly around the frame.

Each sample was heated and remained on the screen until it exploded or the cell had ignited and burned out. It was not required to secure the sample in place unless it was at risk of falling of the screen before the test was completed. When required, the sample was secured to the screen with a single wire tied around the sample.

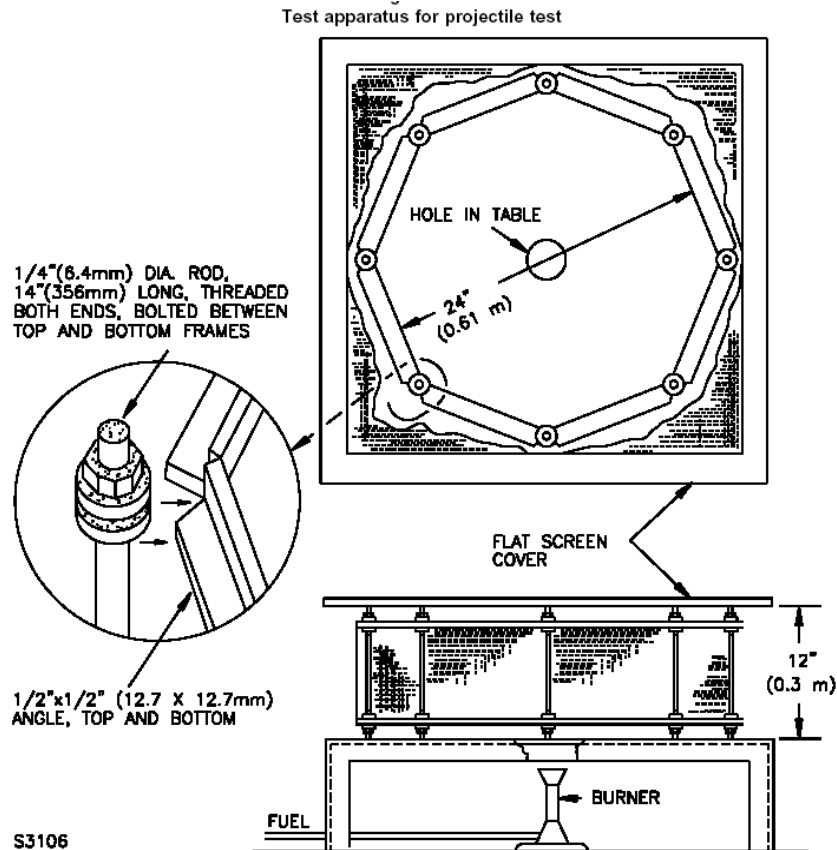
Note: The securement wire was only utilized if the sample would not remain above the flame during the test to achieve ultimate results. In this case the single wire utilized was the minimal thickness necessary to hold the cell in place.

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PROJECTILE TEST (FOR CELLS ONLY):

METHOD (CONT'D)

Figure 1



BASIS FOR ACCEPTABILITY

No part of an exploding cells penetrated the aluminum wire screen such that some or the entire cell protruded through the screen.

Note: A hole in the screen created by a piece of the cell sitting on the screen and burning a hole through the screen was not considered a nonconforming result. Only those holes created by exploding parts puncturing the screen due to the force of the explosion were considered nonconforming results.

STANDARDIZED APPENDIX PAGE (SAP)

Controlled Document: Direct Request for Revision to PDE for Category

BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS)  
COMPONENT - BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS2, BBFS3)

3/4-INCH FLAME TEST:

METHOD

Refer to UL 746C, Flammability - 20 mm (3/4 Inch) Flame Test method.

BASIS FOR ACCEPTABILITY

Refer to UL 746C, Flammability - 20 mm (3/4-Inch) Flame Test acceptance criteria.

BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS)  
COMPONENT - BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS2, BBFS3)

APPENDIX D - MANUFACTURER'S RESPONSIBILITIES

The Follow-Up Service Procedure covering the product is loaned to the manufacturer and constitutes the basis on which the product is judged for compliance with the applicable requirements.

GENERAL

The Manufacturer's general responsibilities, as part of the Follow-Up Services Procedure, are as noted in the published document titled, "UL Mark Surveillance Requirements", and is available through UL's secure customer portal [MyHome@UL.com](mailto:MyHome@UL.com) and/or through UL's internet site [www.UL.com](http://www.UL.com). Manufacturers that do not have Internet access may obtain the current version of these requirements from their local UL Customer Service Representative or UL Field Representative.

BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS)  
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TABLE A - SAMPLE SELECTION GUIDE

Sample Group	#/Group /Year	Model	Report Date	Category	Composition/Type	Additional Info	Test Program Code
1	1	98803, 98815, 98804, 98821, 20857, 28128, 88853, 10239, 10234, 99819, 98817, 28126	2016-01-07	Secondary	Lithium systems		B, D

BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS)  
COMPONENT - BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS2, BBFS3)

INDEX TO FOOTNOTES:




BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS)  
COMPONENT - BATTERIES, HOUSEHOLD AND COMMERCIAL (BBFS2, BBFS3)

TABLE C - TEST CRITERIA

Refer to Sp. App. B for Footnotes and Table A for Additional Information

Model	Capacity, mAh	Nominal Voltage, Vdc	Open Circuit Voltage, Vdc	Max Charge voltage, Vdc	Max Charge current, mA	Top Off Charge Voltage, Vdc	Top off Charge Current, mA	End Point Voltage, Vdc	End Point Current, mA	Duration, hr	Min Supply Voltage for Testing, Vdc	Cell Source
98803, 98815, 98804, 98821, 20857, 28128, 88853, 10239, 10234, 99819, 98817, 28126	2200	5.0				5.0	800	4.5	100	6		

## and Report

## DESCRIPTION

## PRODUCT COVERED:

USL - Rechargeable Li-ion battery power bank, Model(s): 98803, 98815, 98804, 98821, 20857, 28128, 88853, 10239, 10234, 99819, 98817, 28126.

## ELECTRICAL RATING:

Model	Voltage (Nominal), Vdc	Capacity (Nominal), mAh/Wh
All models	5	2200 mAh
Note: The packs have been tested based upon their electrical ratings but no capacity performance testing has been conducted. In addition, no testing with a host product including a charger has been conducted.		

## CELL CHEMISTRY AND CONFIGURATION:

Pack Model	Cell Model	Cell Chemistry and Type#	Number of Cells	Configuration*: X-S/Y-P
All models	FST18650-2200mAh	Lithium-ion / Cylindrical	1	1-S/1-P
* - X = No. of cells in series; Y = Number of parallel strings # - e.g. lithium ion cylindrical, lithium ion prismatic, lithium ion polymer (soft pouch), Ni-Cad prismatic, etc.				

## MANUFACTURER'S RECOMMENDED CHARGING PARAMETERS:

Model	Standard Charging Current, mA	Standard Charging Voltage, Vdc	Maximum Charging Current, mA	Maximum Charging Voltage, Vdc
L15D1P32	800	5	1000	5.5

## TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Products indicated as USL have been investigated using requirements contained in the Second Edition of UL 2054; Standard for Household and Commercial Batteries, issue dated October 29, 2004 and contains revisions through and including September 14, 2011.

Condition of Acceptability - When installed in the end product, consideration shall be given to the following:

1. These battery packs have been evaluated based upon manufacturer's specifications for charging, discharging and temperature limits. They have not been evaluated in combination with charger(s) or host product(s). Additional evaluation to determine that the compatibility of the host with the battery pack and the charger with the battery pack will be needed to ensure that the battery pack is not used outside of its rated limits.
2. The battery pack was subjected to the Abnormal Charging test of UL 2054 which is a high rate charging test for 7 hours minimum based upon the parameters noted in the table below, with acceptable results. The end product evaluation shall determine that the maximum current and the maximum voltage limit noted below are not exceeded under any single fault conditions of the charging circuit.

Abnormal Charging Test Values		
Battery Pack Model	Maximum Abnormal Charging Current, mA	Maximum Abnormal Charging Voltage Limit, V
All models	970	5.5

The battery pack was also subjected to the Abusive Overcharge test of UL 2054 with acceptable results. The abusive overcharge test consisted of charging the pack at a constant current charge rate until ultimate results, based upon the parameters noted in the table below.

Abusive Overcharge Test Values		
Battery Pack Model	10 x C5 constant current (CC) charge rate, mA	5 x C5 constant current charge rate, mA
All models	10 x I(C5) = 4400mA Measured test Value = 980mA	5 x I(C5) = 2200mA Measured test Value = 980mA

The need to conduct additional abnormal/abusive charge testing in the end use application shall be determined.

## and Report

3. The battery pack has been subjected to a short circuit test at both ambient ( $20 \pm 5^{\circ}\text{C}$ ) and  $55 \pm 2^{\circ}\text{C}$ , with a resistance load in the range of  $80 \pm 20 \text{ m}\Omega$ . The need to conduct additional abnormal discharge testing shall be determined in the end use application.
4. The output of all battery power bank models have been determined to be a limited power source in accordance with the Second Edition of UL 2054.
5. The battery packs have been subjected to temperature testing under maximum load charging and discharging conditions and for use in a maximum ambient as noted below. If used in an ambient in excess of the maximum values noted, additional evaluation may be necessary.

Model	Ambient Use Temperatures, C
98803, 98815, 98804, 98821, 20857, 28128, 88853, 10239, 99819, 98817	0 to 45 degree C for charge; 0 to 55 degree C for discharge
28126, 10234	

6. A temperature test with the battery pack in the end use installation shall be conducted under both maximum charging and discharging conditions. During the temperature test, the following temperature limits on temperature sensitive components shall not be exceeded:

Component	Model No.	Temperature Limits, °C
Cell (measured on Casing)	FST18650-2200mAh	100
PWB	Various	130

7. The battery power banks employ a fire enclosure comply with the battery casing minimum V-1 flammability requirement outlined in UL 2054, Second Edition.
8. The battery power banks employ an enclosure that has been evaluated in accordance with the enclosure requirements of UL 2054, 2<sup>nd</sup> Edition.

Model(s)	Manufacturer of enclosure	Model name of enclosure	Minimum thickness (mm)
98803, 98815, 98804, 98821, 20857, 28128, 10239, 10234, 99819, 98817	CHI MEI CORPORATION	PA-765B+ (UL File# E56070)	2.5
88853, 28126	Aluminum Case		

9. The end use application shall consider the need for the following markings and instructions or equivalent for the safe use of the battery pack:

Marking:

"Replace battery with (battery Recognized Company or end product manufacturer's name, part number) only. Use of another battery may present a risk of fire or explosion."

or "See Operating or maintenance Instructions for type of battery to be used" or equivalent with instructions for replacement of the correct battery pack provided.

or A symbol indicating the need to refer to the instruction manual may be used instead of the text noted above.

Instructions:

- a. A warning notice with the following or equivalent:

"Caution - The battery used in this device may present a risk of fire or chemical burn if mistreated. Do not disassemble, heat above (manufacturer's maximum temperature limit), or incinerate. Replace battery with (battery manufacturer's name or end product manufacturer's name and part number) only. Use of another battery may present a risk of fire or explosion."

- b. Complete instructions as to how to replace the battery including the following or equivalent statement:

"Dispose of used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire."

## MARKINGS/INSTRUCTIONS:

All markings shall be legible and permanent such as ink stamped, etched, adhesive labels, etc. All adhesive labels shall be R/C (PGDQ2) component marking and labeling systems or printed on R/C (PGJI2) Component Printing Materials.

Nameplate Marking - The Recognized Company, file number, trade name, trademark or other descriptive marking, catalog or model number, electrical rating, and Recognition Marking, and Recognition Marking for Canada.

Date of Manufacturer Marking - The batteries/packs shall be marked with the manufacturer's date of manufacture, which may be abbreviated; or may be in a nationally accepted conventional code; or in a code that does not repeat in less than 10 years.

The date code consists of the following:

## YYYYMM:

YYYY represents the year of manufacture of products;

MM represents the month of manufacture of products.

For example, 201512 represents that this battery power bank is manufactured on December, 2015.

Cautionary Markings/Instructions - Each 1) battery pack; or 2) the smallest unit package, must be marked with; or 3) instructions provided with each battery, must include the following statements or equivalent:

- a. An attention word such as "CAUTION", "WARNING", or "DANGER", and a brief description of possible hazards associated with mishandling of the battery pack such as burn hazard, fire hazard, explosion hazard, and
- b. A list of actions to take to avoid possible hazards, such as do not crush, disassemble, dispose of in fire, or similar actions.
- c. Instructions regarding replacement batteries.

A Rechargeable Lithium Polymer Battery pack shall be marked with the following or equivalent: "CAUTION: Risk of Fire and Burns. Do Not Open, Crush, Heat Above (manufacturer's specified maximum temperature) or Incinerate. Follow Manufacturer's Instructions." This wording or equivalent shall also be included in the instructions packaged with the battery pack.

Charging Marking/Instructions - Recommended charging information is also provided on the product, its smallest packaging unit, or the instructions provided with each battery pack.

The charging limits as outlined in the Manufacturer's Recommended Charging Parameters Table above are provided as part of these instructions.

CIRCUIT BOARDS AND INTERNAL WIRING:

All circuit boards employed in the assembly are R/C (ZPMV2) rated V-1 minimum, 130°C, except as described in this report.



Rechargeable Li-ion Battery, Model(s): 98803, 98815, 98804, 98821, 20857, 28128, 88853, 10239, 10234, 99819, 98817, 28126; Fig. 1 thru Fig.12 and Ill.1 thru Ill.13 for additional views of overall battery constructions.

1. Cell(s) - See tables and information below:

Battery Pack Model	Cell Manufacturer	Cell Model	R/C Cells, Y or N*	File Reference,	
				File No.	Report Date
--	--	--	--		
All models	JIANGXI FIRST NEW ENERGY CO LTD	FST18650- 2200mAh	Y	Mh48852	2012-06-07
Note: See Cell Chemistry and Configuration Table at beginning of report for information on type of cells, number of cells and their configuration in the battery pack circuit.					

Connections to cell terminals are constructed as noted below:

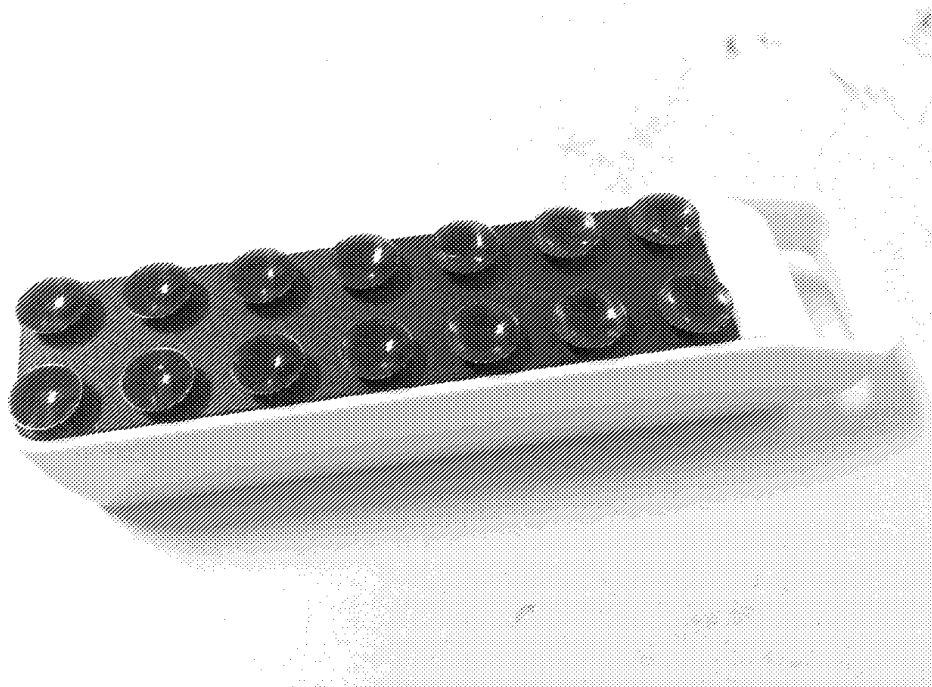
Pack Model No.	Description	Ills. No. or description
All models	Connected by metal tabs and soldered to PWB	Directly soldering to the PWB. Refer to Fig. 25 and Fig. 27

## 2. Protective Circuitry - Consists of the following Components:

Battery Pack Model No.	Type of Protective Component	Location of Component Within Pack	Component Manufacturer	Component Part No.	Component Ratings
All models	Control IC (U1)	PWB	RZC	RZC6291	Vdd: 2.6V-5.5V, output current: 2A
	Control IC (U3)	PWB	RZC	DW01AM	Vcc: 3.9V, Max. ICC: 6.0 uA
	Diode (D3)	PWB	SHANGHAI MICROELECTRONICS CO., LTD.	SS34	40V, 3A
	MOSFET (Q3)	PWB	RZC	SST8205S	VDS:20 V, Id: 6A
	Inductor (L1)	PWB	Interchangeable	Interchangeable	3.3uH

3. Printed Wiring Board (PWB) - R/C (ZPMV2), Min. V-1, 130 degree C.
4. Insulation mylar (labeling)- R/C (PGDQ2 or PGJI2) , Minimum VTM-1, minimum 75 degree C.
5. Plastic material - R/C (QMFZ2), marked 'Flame Retardant', or evaluated for flammability minimum V-2 or VTM-2 as applicable, or total volume is less than 2cm<sup>3</sup>.
6. Leading wire - R/C (AVLV2), rated: minimum 24 AWG, minimum 100 Degree C

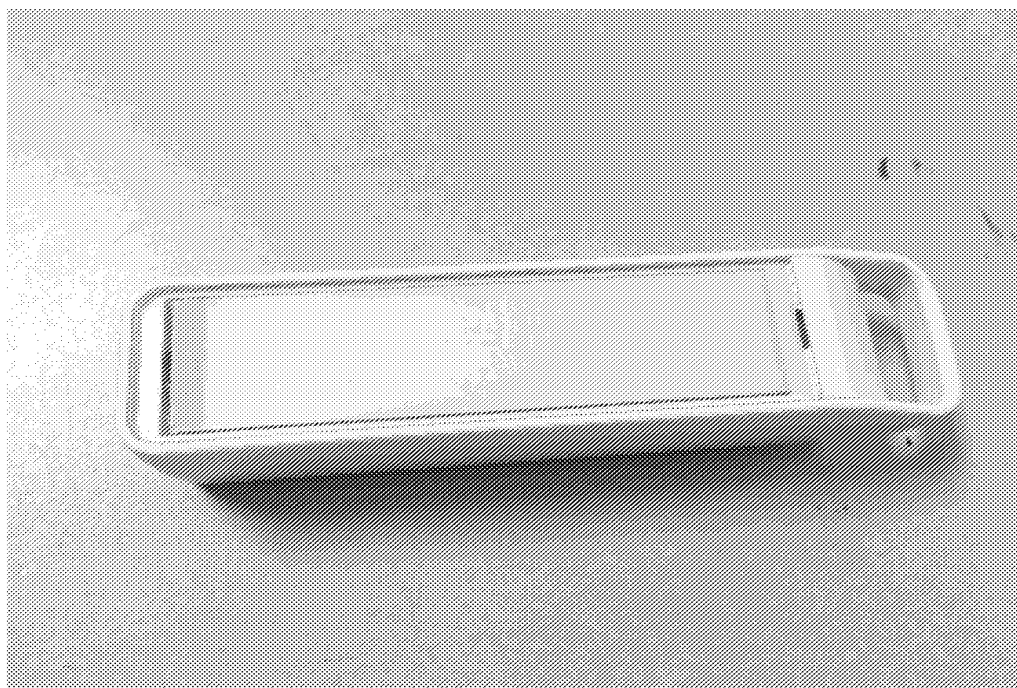
**Model: 98817**



N161447381



N161447381

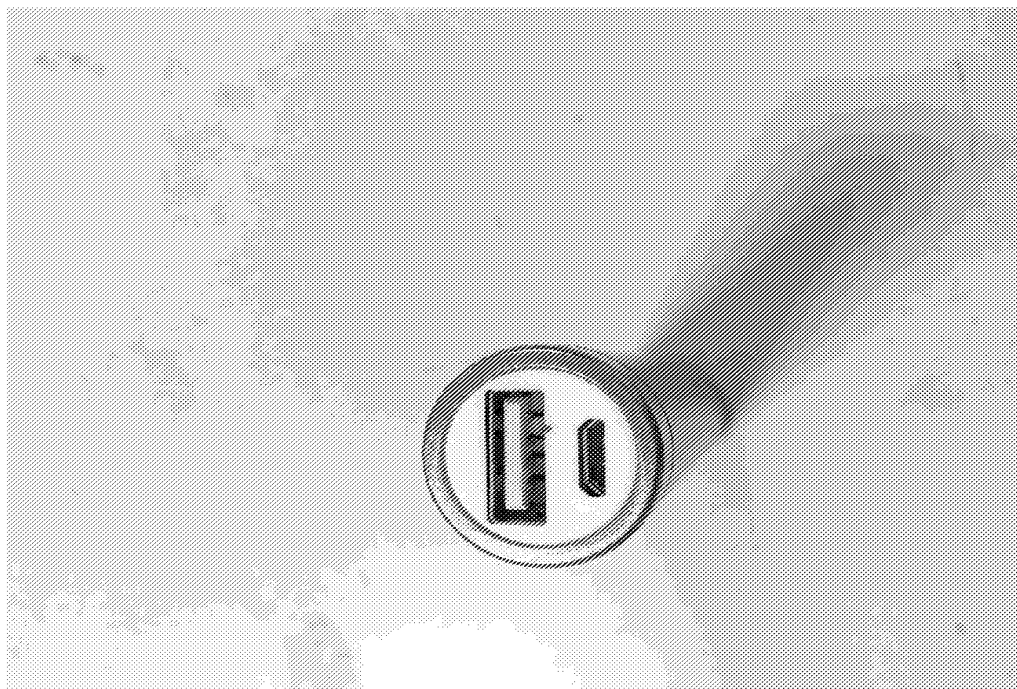


N161447381

**Model: 88853**



N161447385



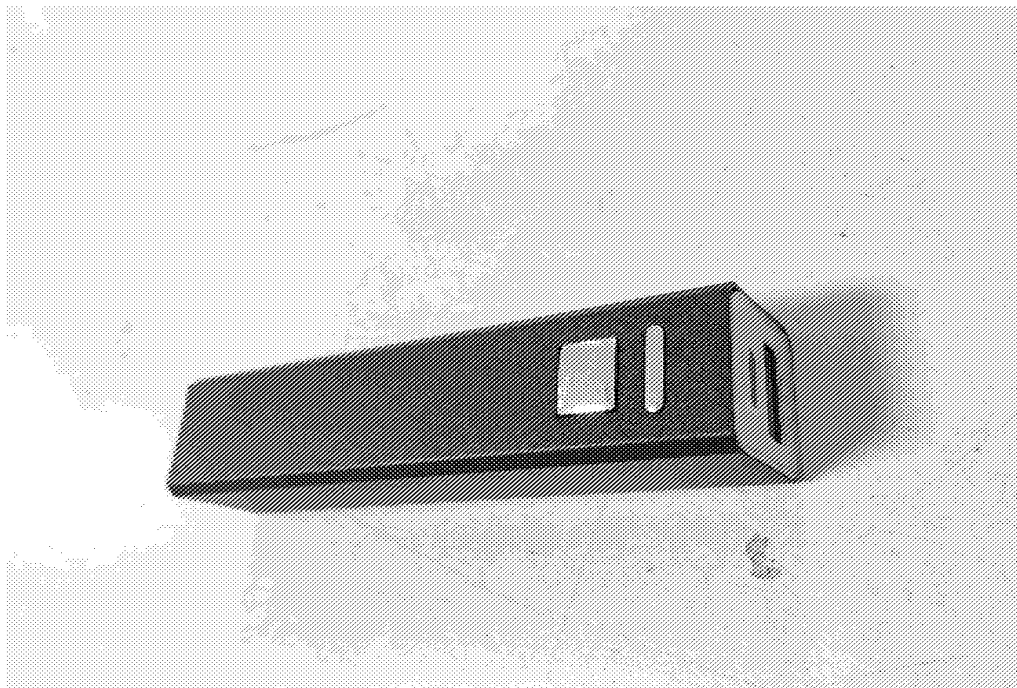
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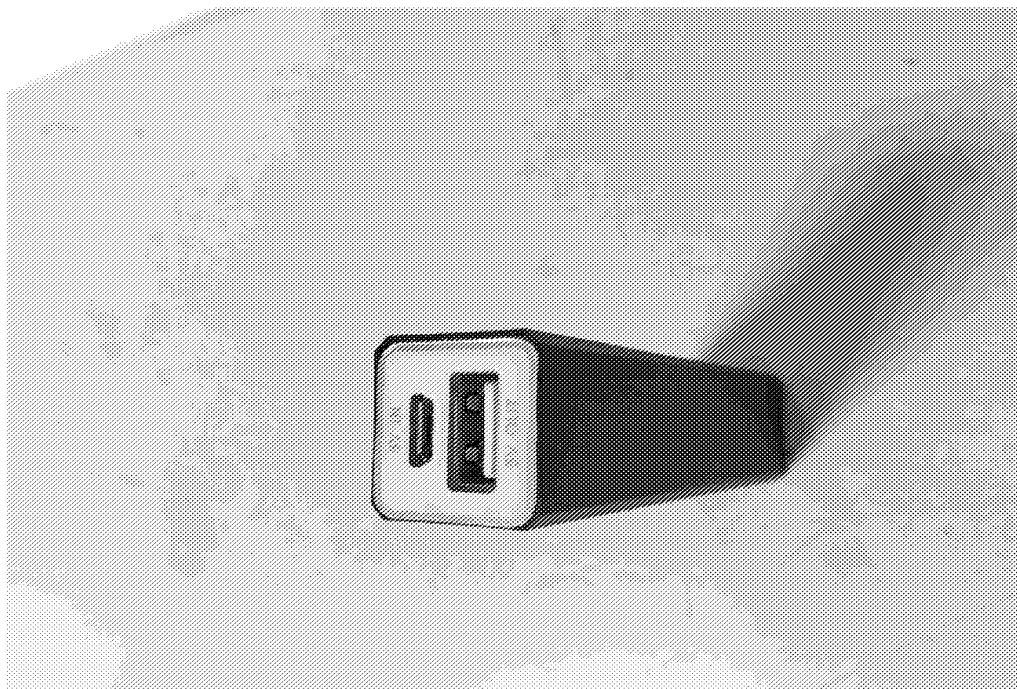
N161447385



**Model: 28126**



N161447386

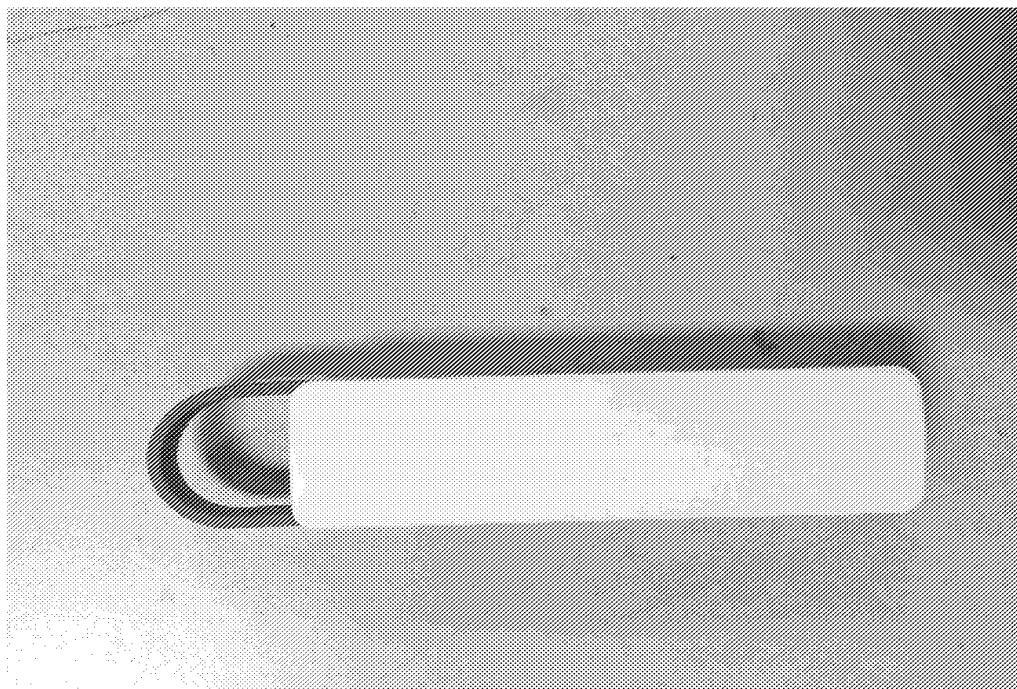


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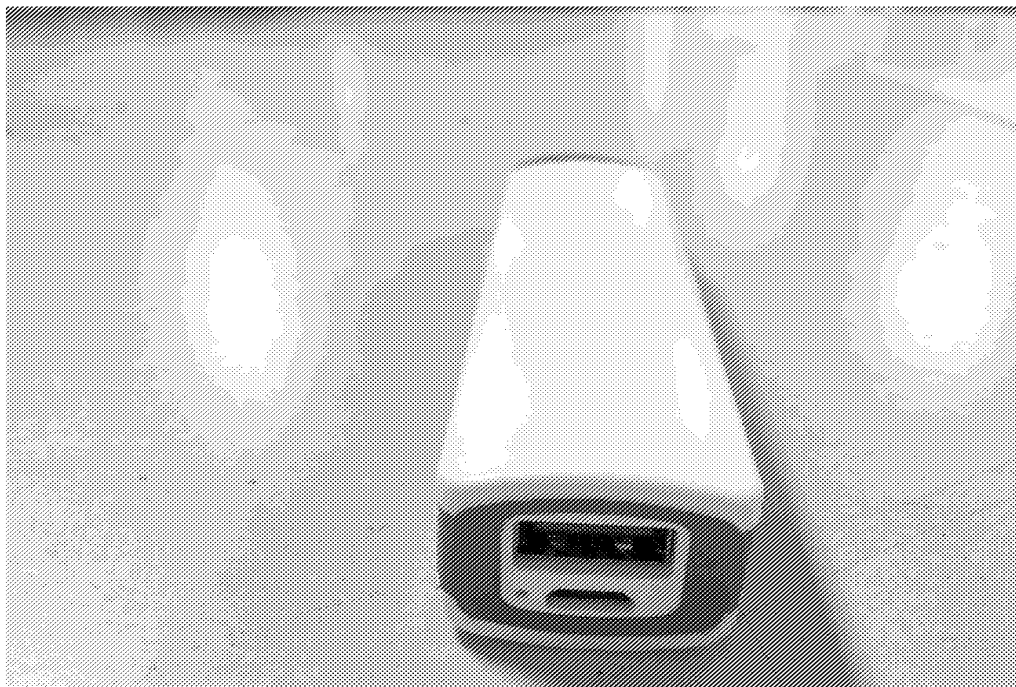
**Model: 98821**



N161447387



N161447387

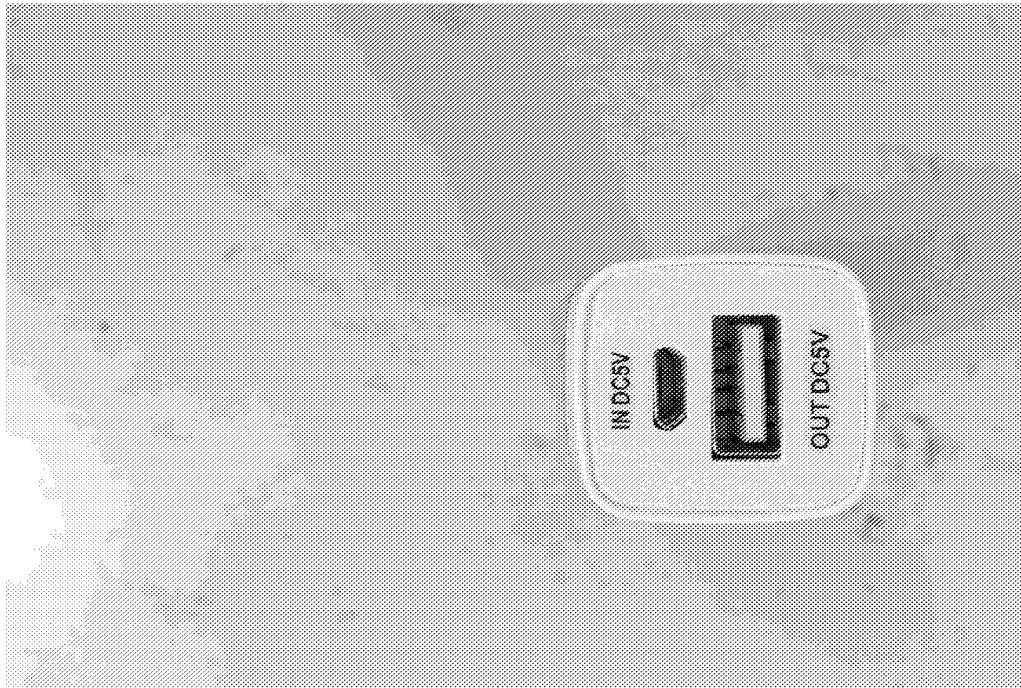


N161447387

**Model: 28128**



N161447388



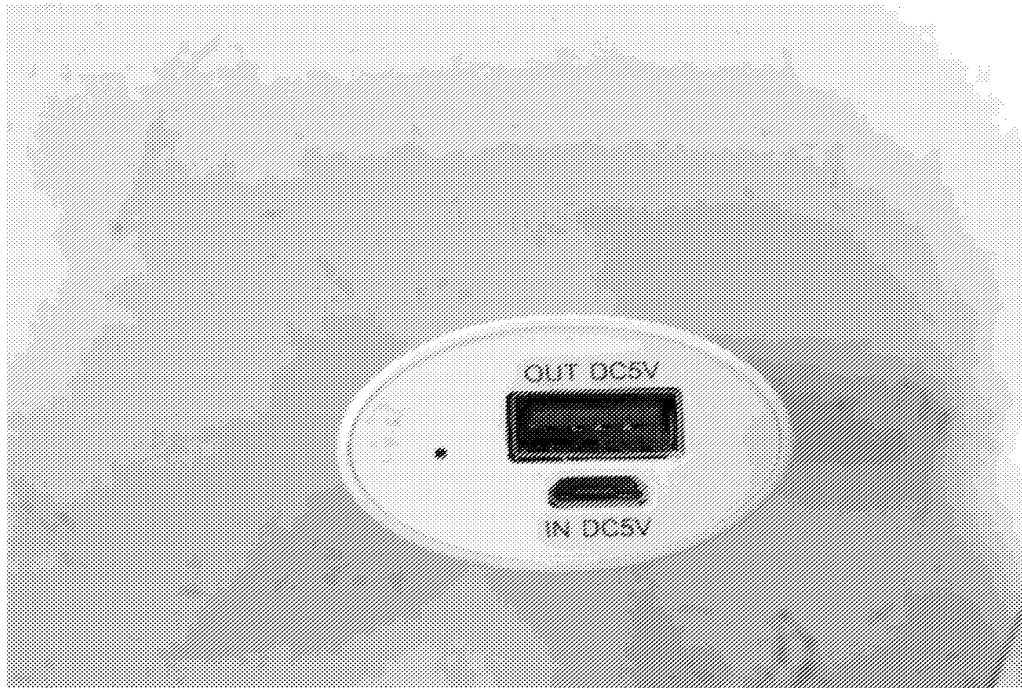
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**Model: 98803**



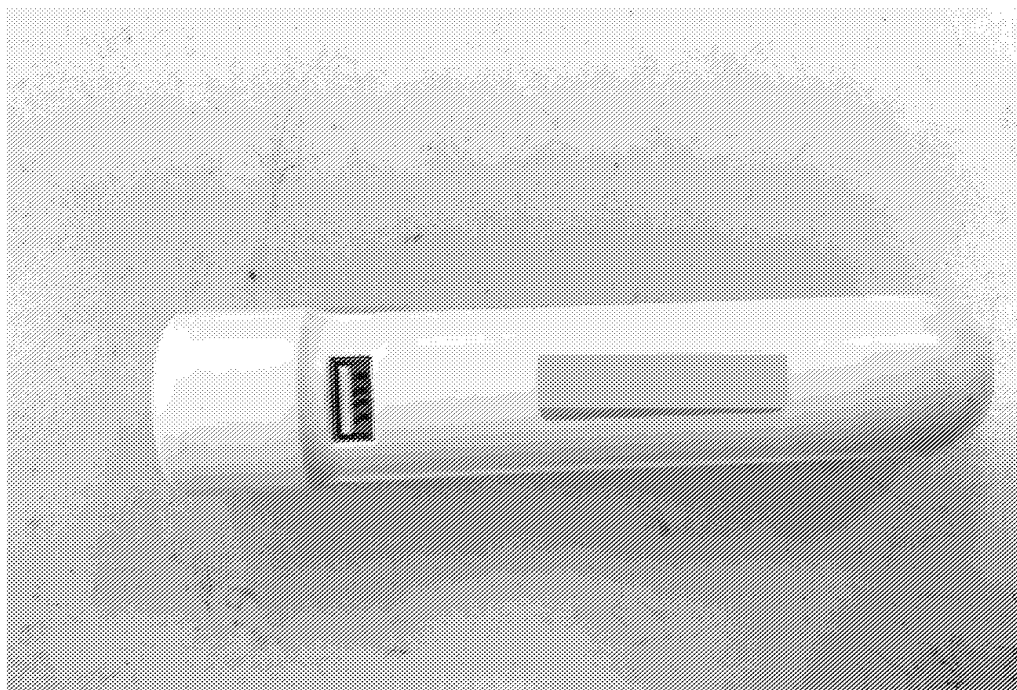
N161447389





N161447389

**Model: 10234**





N161447390

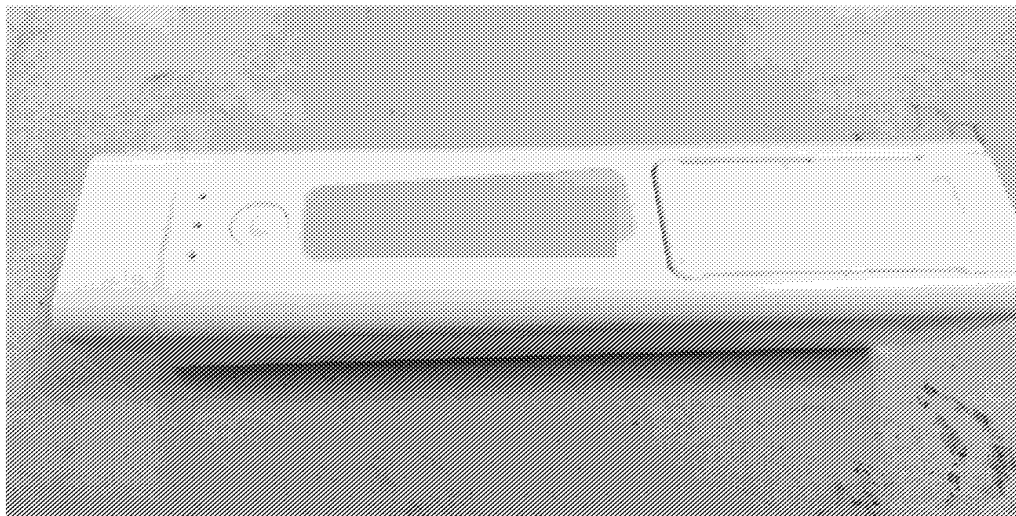


N161447390

**Model: 10239**



N161447391

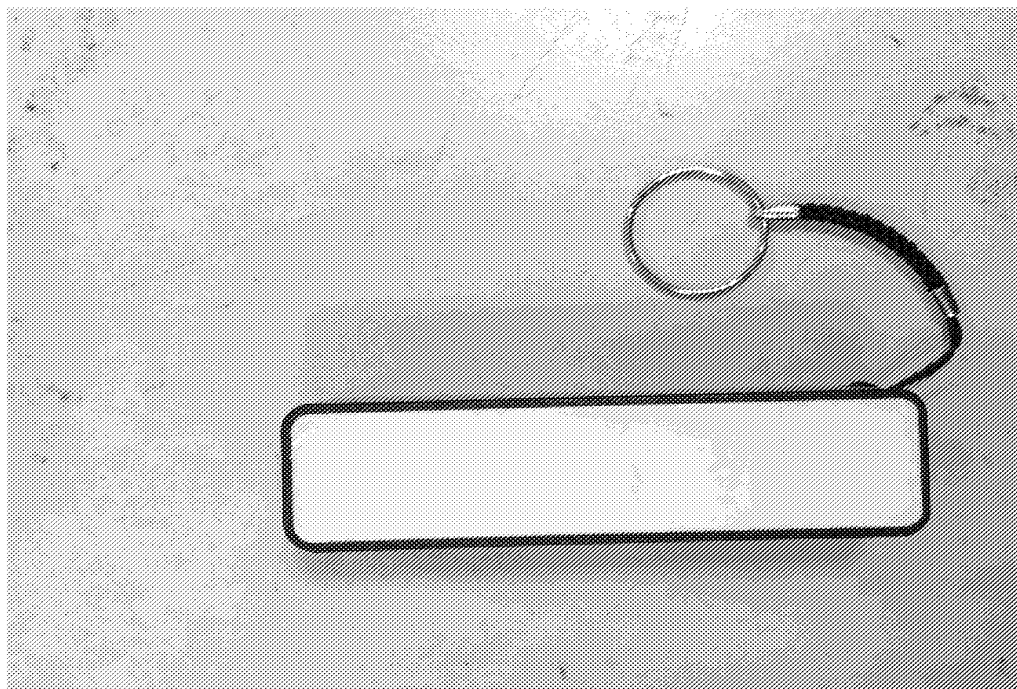


N161447391

**Model: 20857**

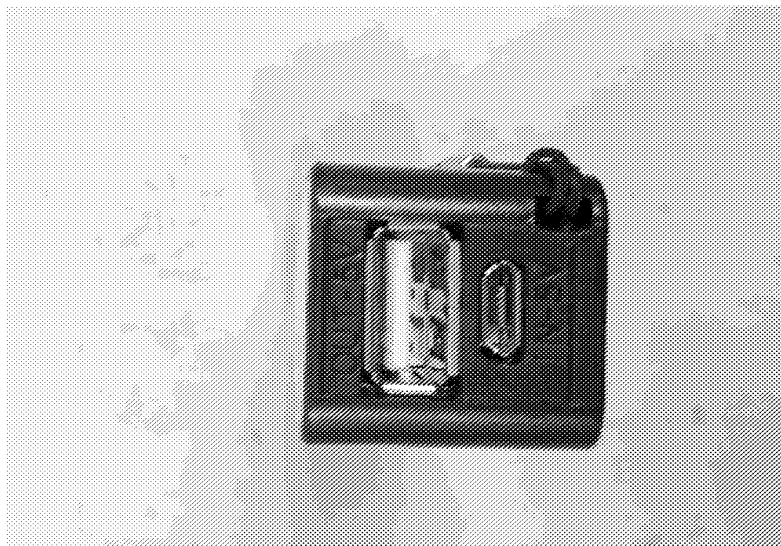


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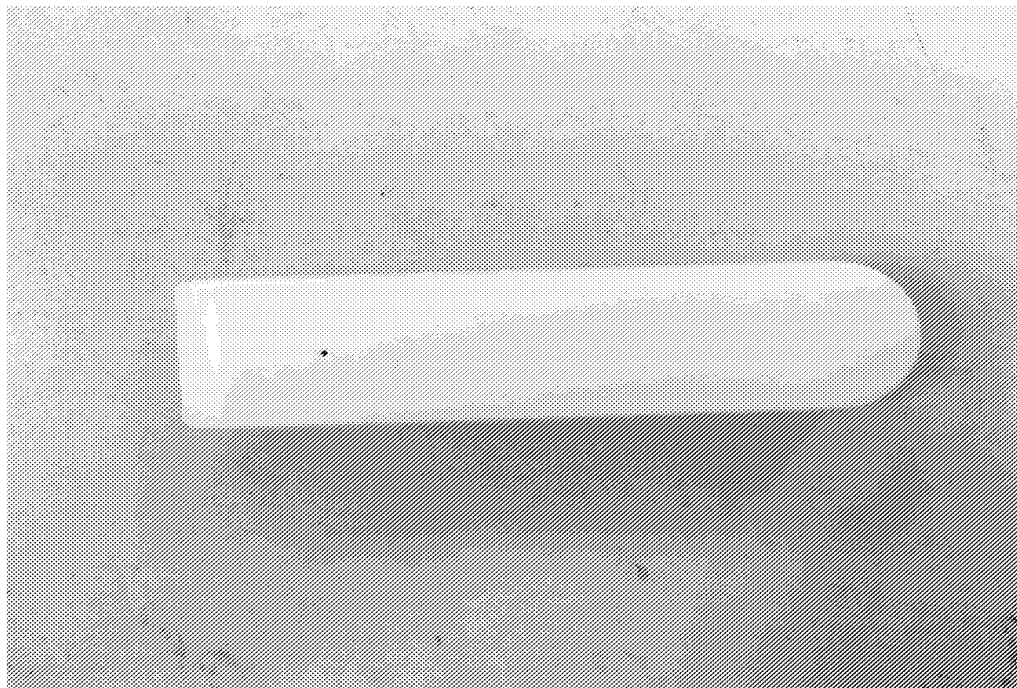
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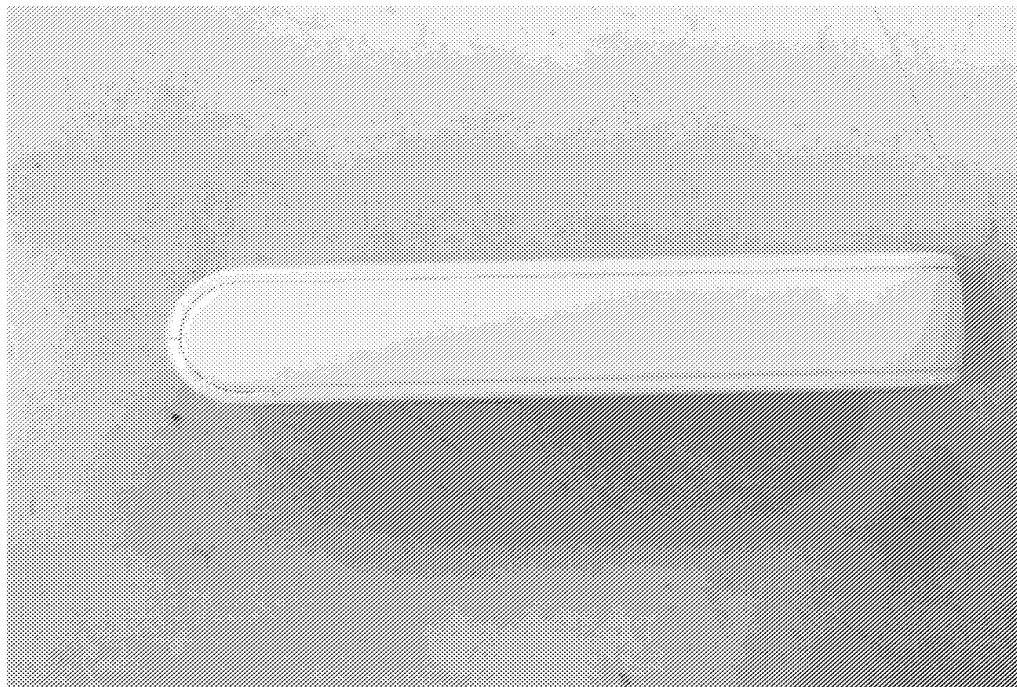


N161447392

**Model: 98815**



N161447382



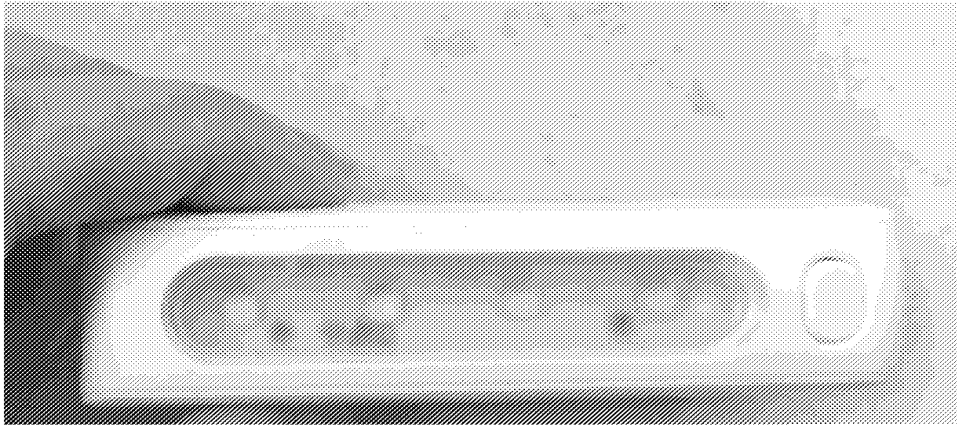
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N161447382

**Model: 99819**

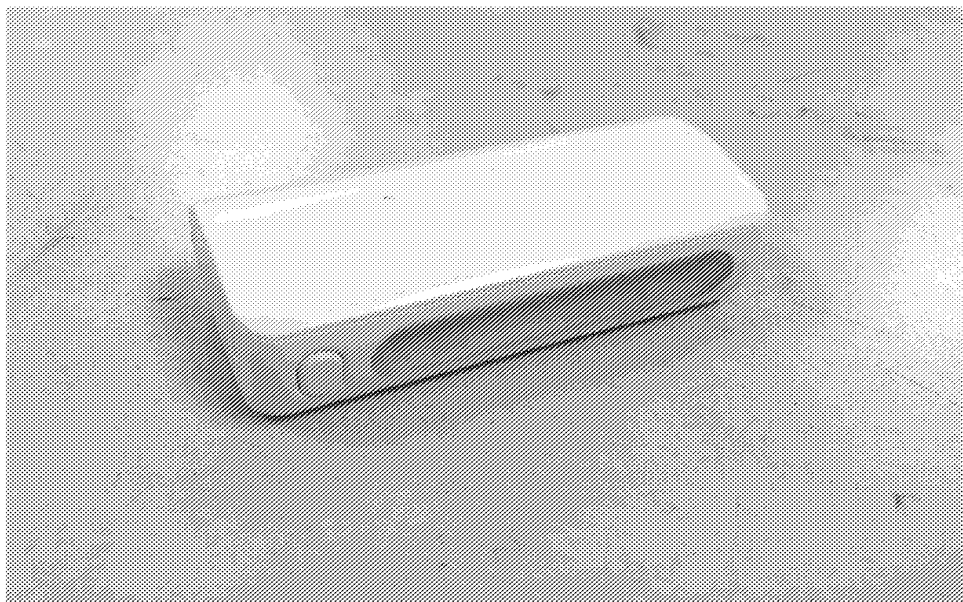




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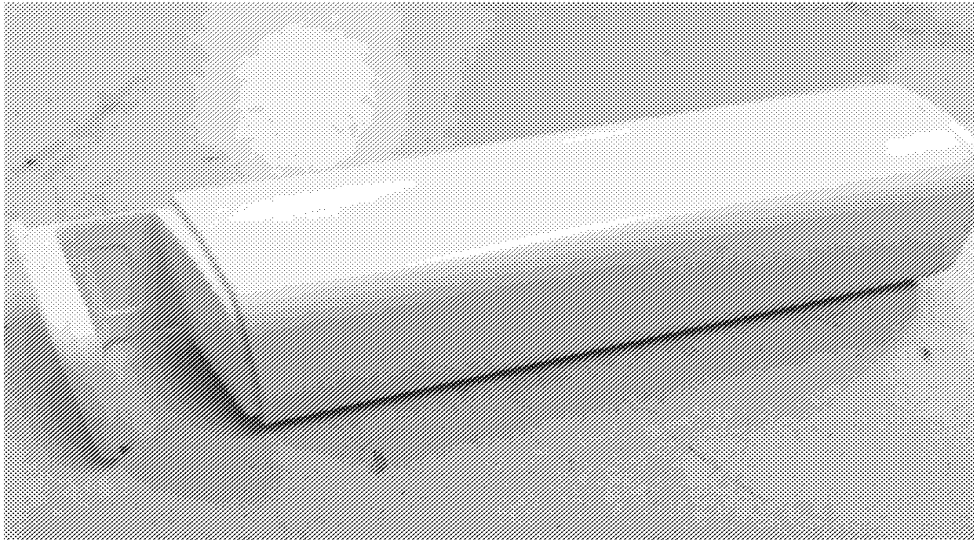
N161447383



N161447383



**Model: 98804**



N161447384



N161447384

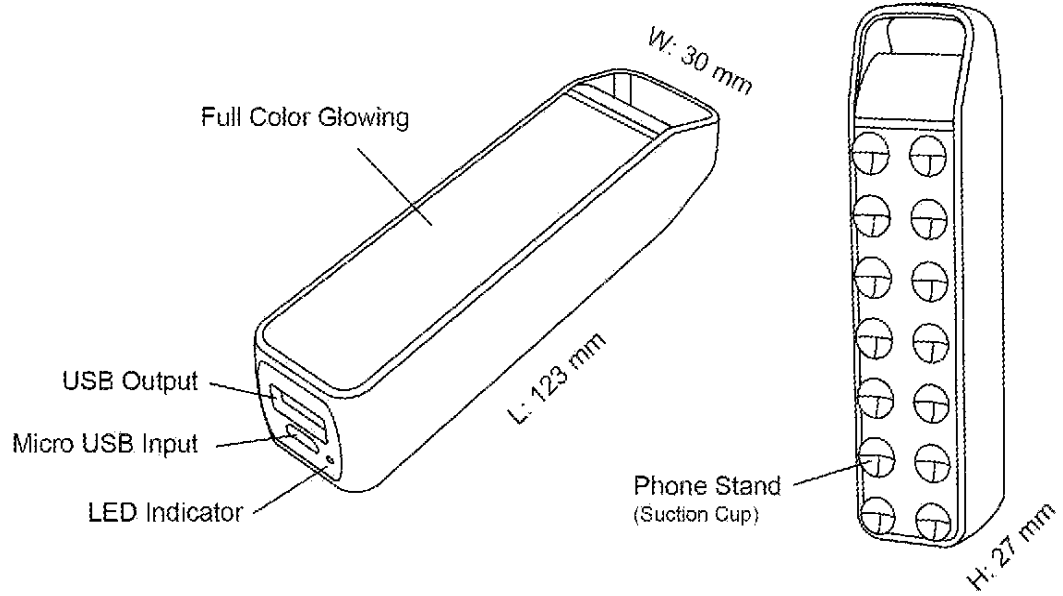


N161447384

Construction (unit: mm):

**MODEL: 98817**

• **Power Bank**



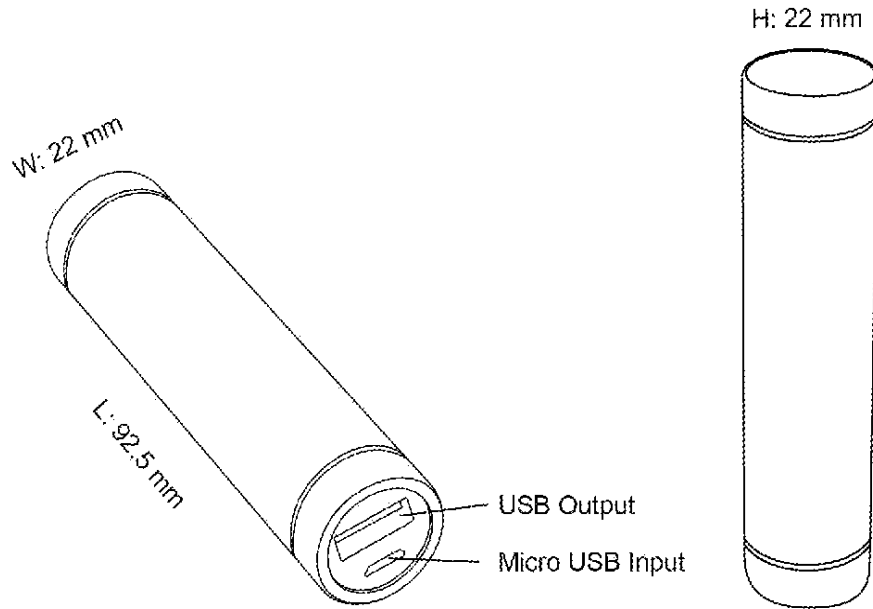
Dimensions: Length\*Width\*Height: 123mm\*30mm\*27mm

N161447409

Construction (unit: mm):

**MODEL: 88853**

● **Power Bank**



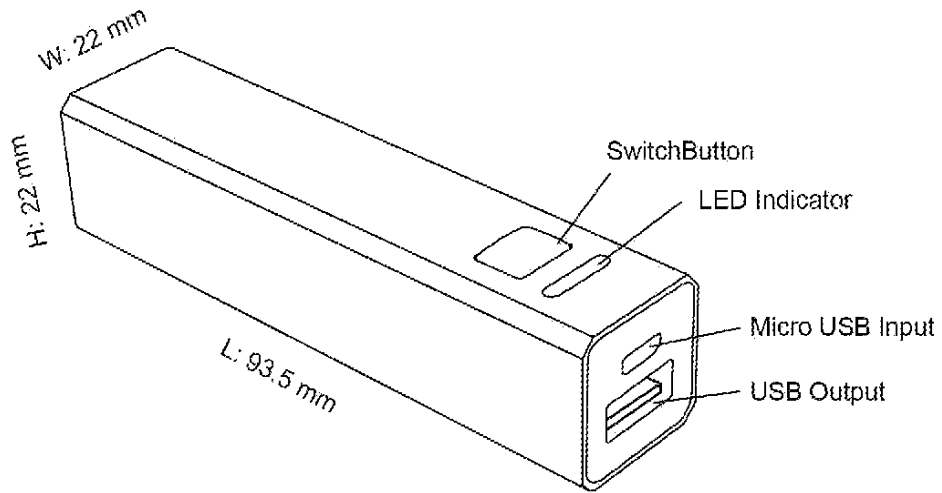
Dimensions: Length\*Width\*Height: 92.5mm\*22mm\*22mm

N161447421

Construction (unit: mm):

**MODEL: 28126**

## • Power Bank



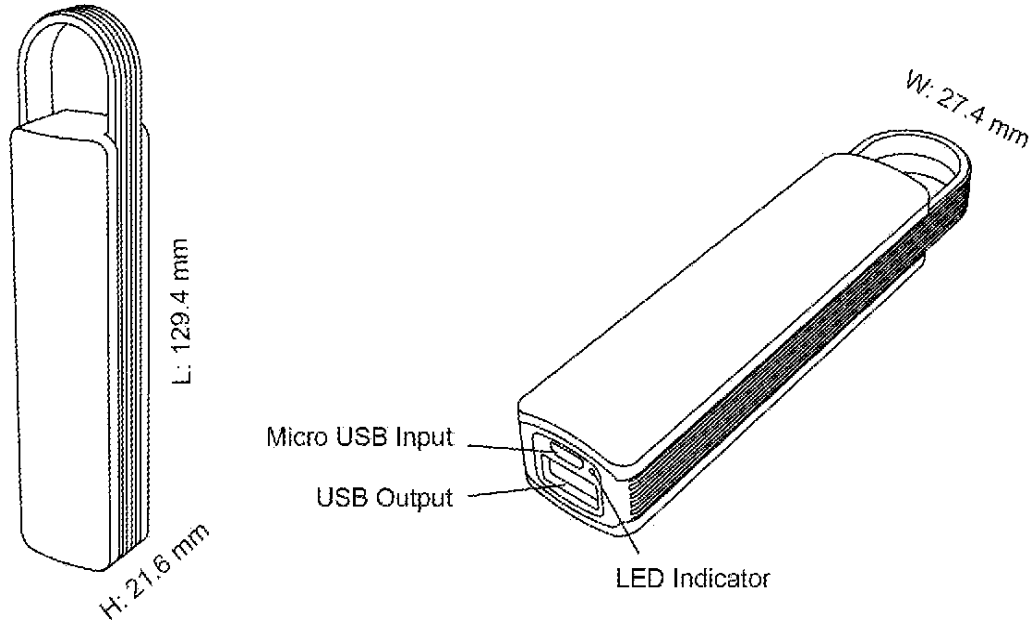
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N161447424

Construction (unit: mm):

**MODEL: 98821**

• **Power Bank**



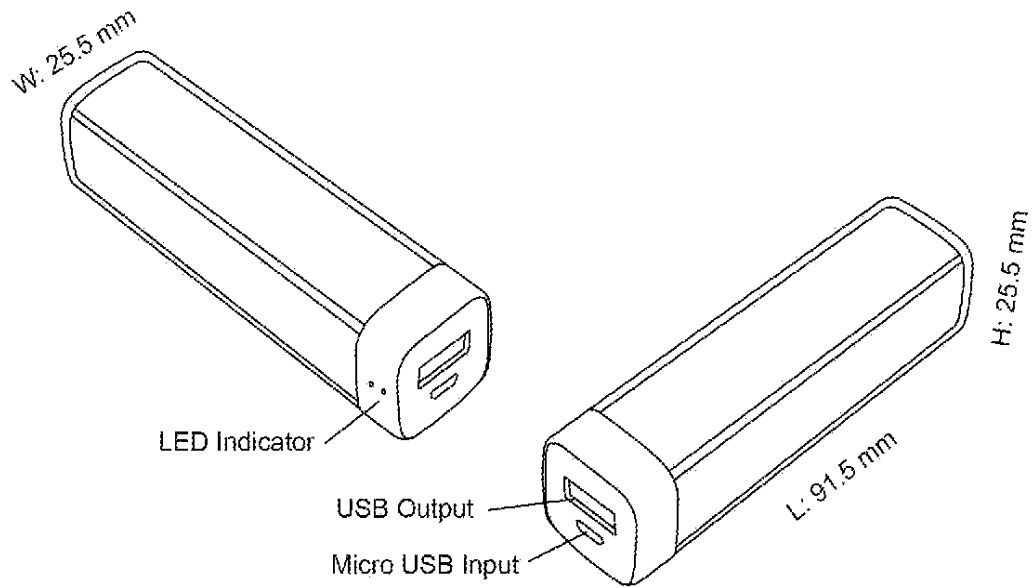
Dimensions: Length\*Width\*Height: 129.4mm\*27.4mm\*21.6mm

N161447426

Construction (unit: mm):

**MODEL: 28128**

● **Power Bank**



Dimensions: Length\*Width\*Height: 91.5mm\*25.5mm\*25.5mm

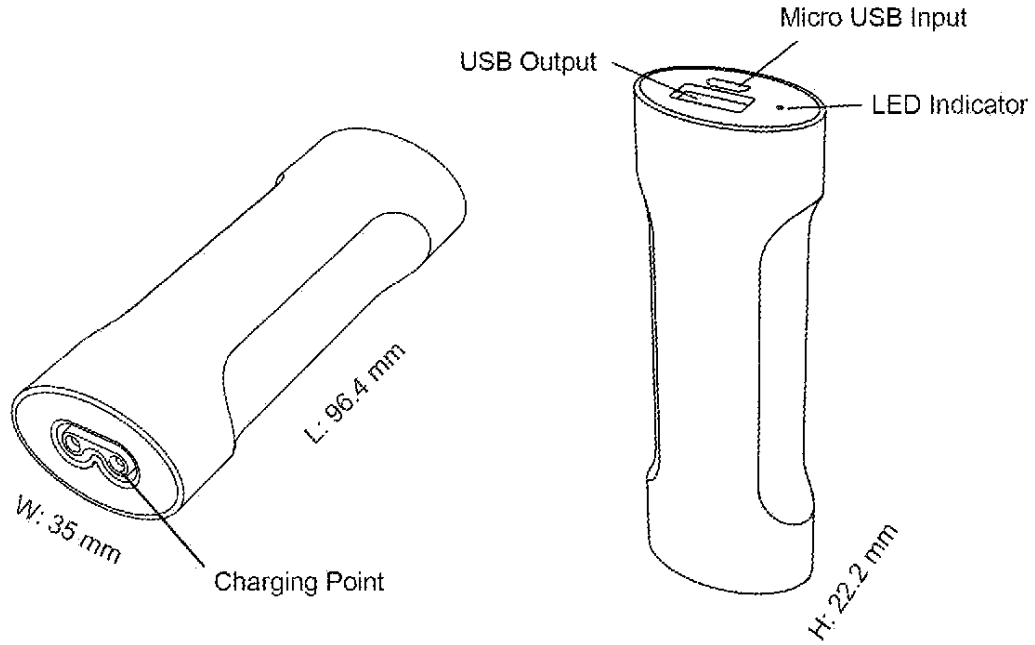
N161447428



Construction (unit: mm):

**MODEL: 98803**

# ● Power Bank



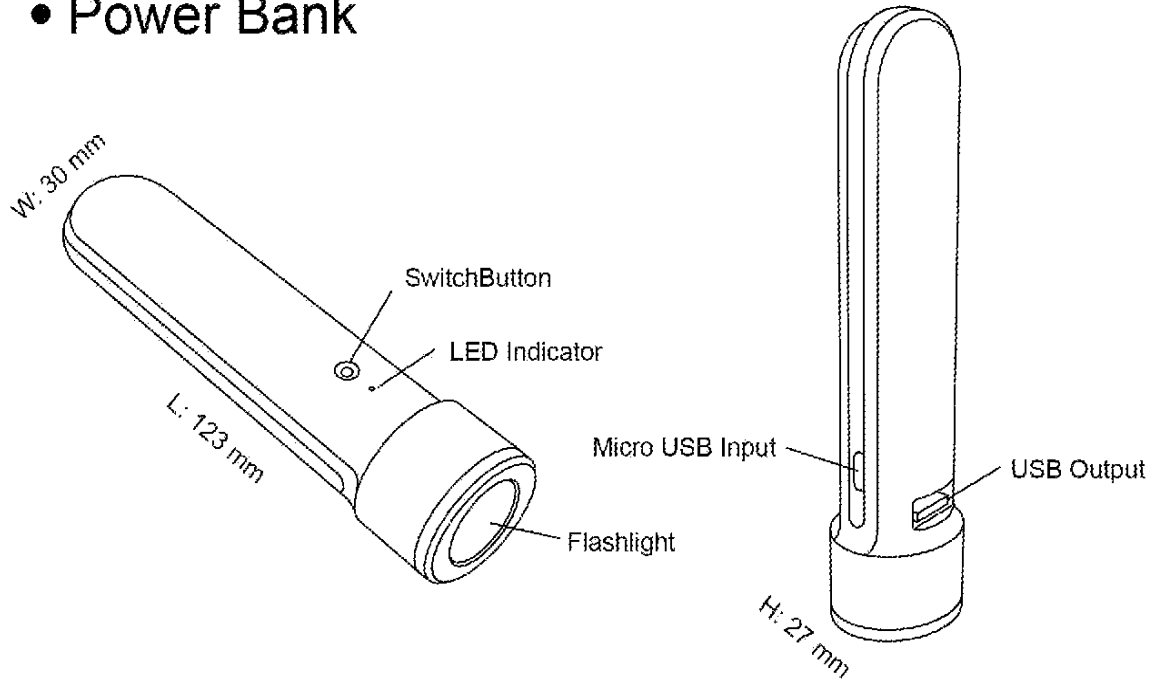
Dimensions: Length\*Width\*Height: 96.4mm\*35mm\*22.2mm

N161447430

Construction (unit: mm):

**MODEL: 10234**

• **Power Bank**



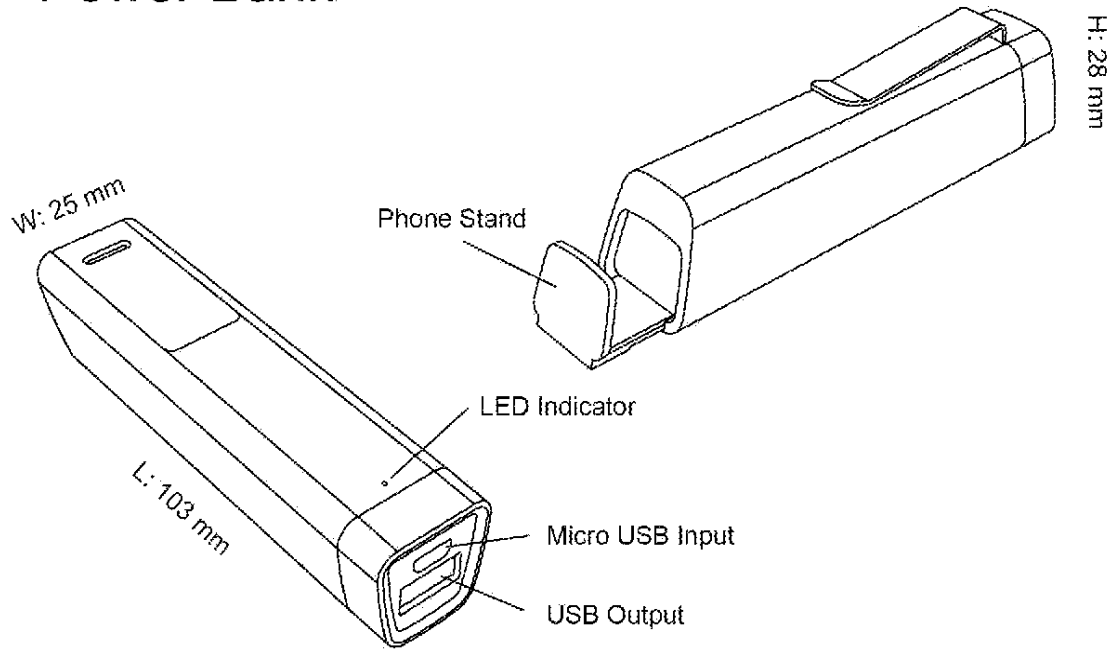
Dimensions: Length\*Width\*Height: 123mm\*30mm\*27mm

N161447432

Construction (unit: mm):

**MODEL: 10239**

• **Power Bank**



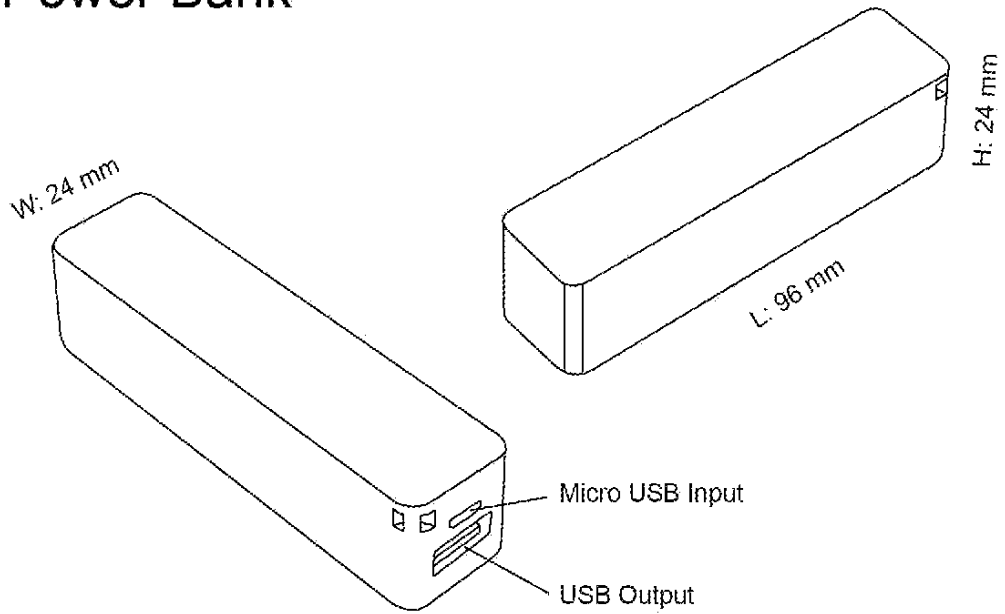
Dimensions: Length\*Width\*Height: 103mm\*25mm\*28mm

N161447433

Construction (unit: mm):

**MODEL: 20857**

• **Power Bank**



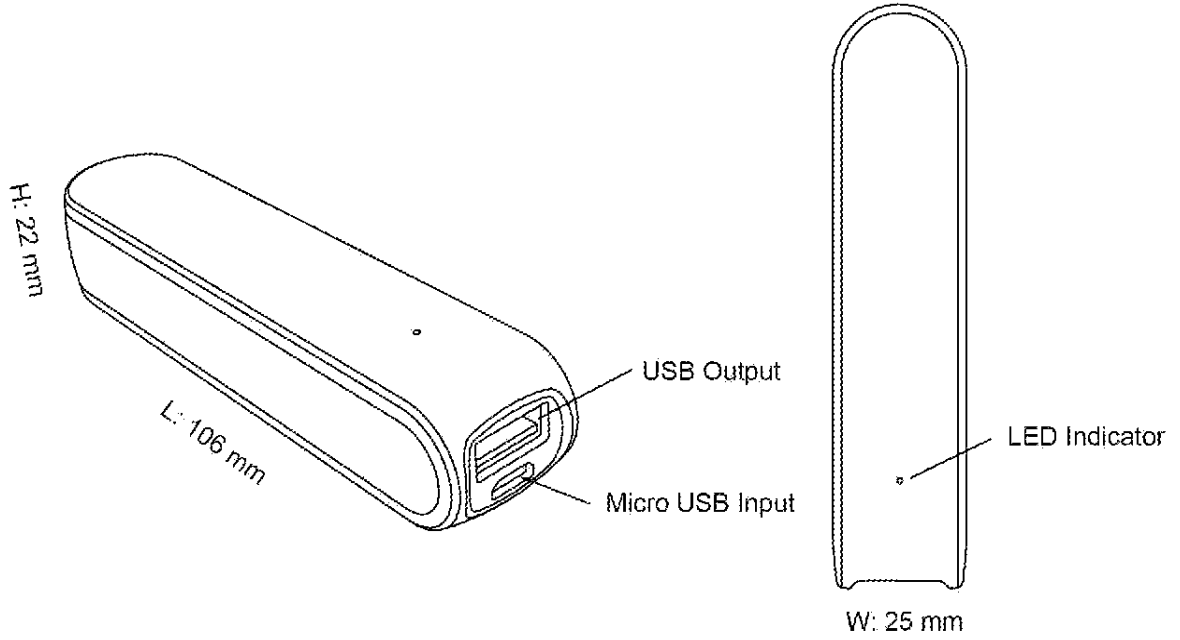
Dimensions: Length\*Width\*Height: 96mm\*24mm\*24mm

N161447434

Construction (unit: mm):

**MODEL: 98815**

• **Power Bank**



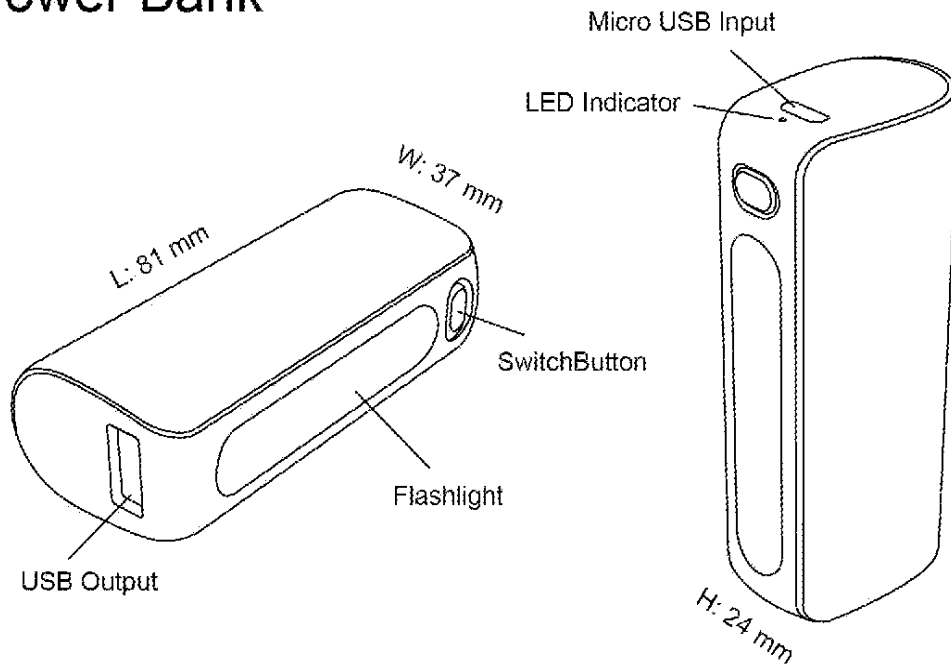
Dimensions: Length\*Width\*Height: 106mm\*25mm\*22mm

N161447411

Construction (unit: mm):

**MODEL: 99819**

• **Power Bank**



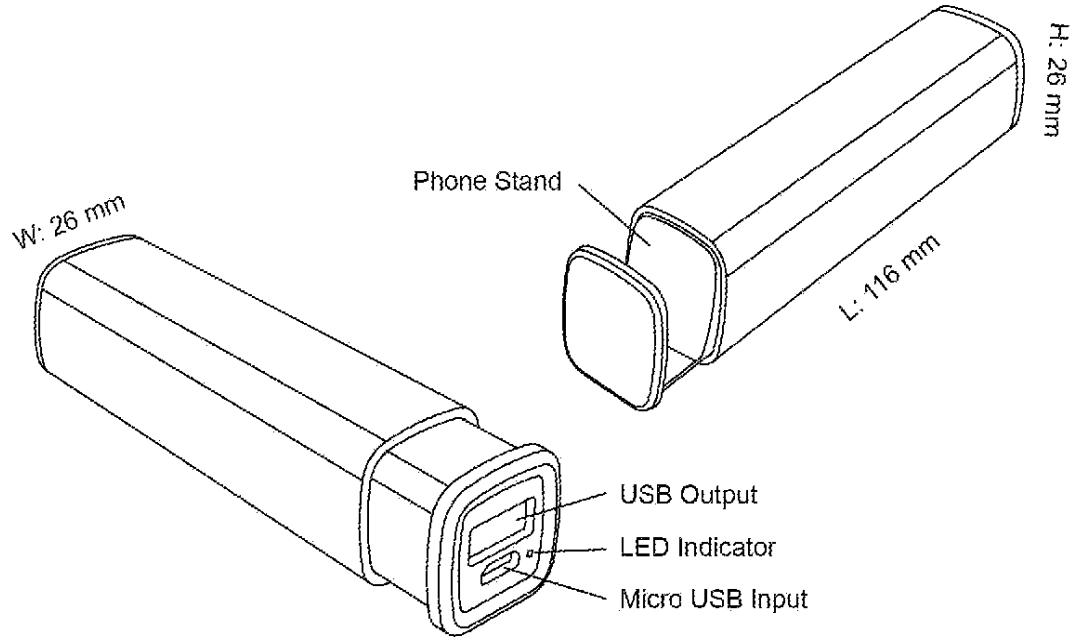
Dimensions: Length\*Width\*Height: 81mm\*37mm\*24mm

N161447413

Construction (unit: mm):

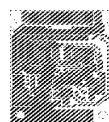
**MODEL: 98804**

● **Power Bank**



Dimensions: Length\*Width\*Height: 116mm\*26mm\*26mm

N161447415



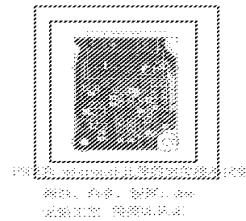








N161447418



N161447418

# CERTIFICATE OF COMPLIANCE

**Certificate Number** 20160111-MH61176  
**Report Reference** MH61176-20160107  
**Issue Date** 2016-January-11

**Issued to:** Ningbo Linch Toys Manufactory Co Ltd  
No 23 Xinyuan No.1 RD,Ninghai  
Ningbo  
Zhejiang 315040 CHINA

**This is to certify that  
representative samples of**

BATTERIES, HOUSEHOLD AND COMMERCIAL  
Rechargeable Li-ion battery power bank, Model(s): 98803,  
98815, 98804, 98821, 20857, 28128, 88853, 10239, 10234,  
99819, 98817, 28126.

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

**Standard(s) for Safety:**

UL 2054- Household and commercial Batteries  
CAN/CSA-C22.2 No. 60950-1-07- Information Technology  
Equipment-Safety-Part1: General Requirements

**Additional Information:**

See the UL Online Certifications Directory at  
[www.ul.com/database](http://www.ul.com/database) for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's  
Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Assistant Chief Engineer, Global Inspection and Field Services  
UL LLC

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contact a local UL Customer Service Representative at [www.ul.com/contactus](http://www.ul.com/contactus)



File MH61176  
Project 4787162407

January 7, 2016

REPORT

On

COMPONENT - BATTERIES, HOUSEHOLD AND COMMERCIAL  
(BBFS)

NINGBO LINCH TOYS MANUFACTURY CO LTD  
Zhejiang, China

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## DESCRIPTION

## PRODUCT COVERED:

USL - Rechargeable Li-ion battery power bank, Model(s): 98803, 98815, 98804, 98821, 20857, 28128, 88853, 10239, 10234, 99819, 98817, 28126.

## ELECTRICAL RATING:

Model	Voltage (Nominal), Vdc	Capacity (Nominal), mAh/Wh
All models	5	2200 mAh
Note: The packs have been tested based upon their electrical ratings but no capacity performance testing has been conducted. In addition, no testing with a host product including a charger has been conducted.		

## CELL CHEMISTRY AND CONFIGURATION:

Pack Model	Cell Model	Cell Chemistry and Type#	Number of Cells	Configuration*: X-S/Y-P
All models	FST18650-2200mAh	Lithium-ion / Cylindrical	1	1-S/1-P
* - X = No. of cells in series; Y = Number of parallel strings # - e.g. lithium ion cylindrical, lithium ion prismatic, lithium ion polymer (soft pouch), Ni-Cad prismatic, etc.				

## MANUFACTURER'S RECOMMENDED CHARGING PARAMETERS:

Model	Standard Charging Current, mA	Standard Charging Voltage, Vdc	Maximum Charging Current, mA	Maximum Charging Voltage, Vdc
L15D1P32	800	5	1000	5.5

## TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Products indicated as USL have been investigated using requirements contained in the Second Edition of UL 2054; Standard for Household and Commercial Batteries, issue dated October 29, 2004 and contains revisions through and including September 14, 2011.

Condition of Acceptability - When installed in the end product, consideration shall be given to the following:

1. These battery packs have been evaluated based upon manufacturer's specifications for charging, discharging and temperature limits. They have not been evaluated in combination with charger(s) or host product(s). Additional evaluation to determine that the compatibility of the host with the battery pack and the charger with the battery pack will be needed to ensure that the battery pack is not used outside of its rated limits.
2. The battery pack was subjected to the Abnormal Charging test of UL 2054 which is a high rate charging test for 7 hours minimum based upon the parameters noted in the table below, with acceptable results. The end product evaluation shall determine that the maximum current and the maximum voltage limit noted below are not exceeded under any single fault conditions of the charging circuit.

Abnormal Charging Test Values		
Battery Pack Model	Maximum Abnormal Charging Current, mA	Maximum Abnormal Charging Voltage Limit, V
All models	970	5.5



The battery pack was also subjected to the Abusive Overcharge test of UL 2054 with acceptable results. The abusive overcharge test consisted of charging the pack at a constant current charge rate until ultimate results, based upon the parameters noted in the table below.

Abusive Overcharge Test Values		
Battery Pack Model	10 x C5 constant current (CC) charge rate, mA	5 x C5 constant current charge rate, mA
All models	10 x I(C5) = 4400mA Measured test Value = 980mA	5 x I(C5) = 2200mA Measured test Value = 980mA

The need to conduct additional abnormal/abusive charge testing in the end use application shall be determined.

## and Report

3. The battery pack has been subjected to a short circuit test at both ambient ( $20 \pm 5^{\circ}\text{C}$ ) and  $55 \pm 2^{\circ}\text{C}$ , with a resistance load in the range of  $80 \pm 20 \text{ m}\Omega$ . The need to conduct additional abnormal discharge testing shall be determined in the end use application.
4. The output of all battery power bank models have been determined to be a limited power source in accordance with the Second Edition of UL 2054.
5. The battery packs have been subjected to temperature testing under maximum load charging and discharging conditions and for use in a maximum ambient as noted below. If used in an ambient in excess of the maximum values noted, additional evaluation may be necessary.

Model	Ambient Use Temperatures, C
98803, 98815, 98804, 98821, 20857, 28128, 88853, 10239, 99819, 98817	0 to 45 degree C for charge; 0 to 55 degree C for discharge
28126, 10234	

6. A temperature test with the battery pack in the end use installation shall be conducted under both maximum charging and discharging conditions. During the temperature test, the following temperature limits on temperature sensitive components shall not be exceeded:

Component	Model No.	Temperature Limits, °C
Cell (measured on Casing)	FST18650-2200mAh	100
PWB	Various	130

7. The battery power banks employ a fire enclosure comply with the battery casing minimum V-1 flammability requirement outlined in UL 2054, Second Edition.
8. The battery power banks employ an enclosure that has been evaluated in accordance with the enclosure requirements of UL 2054, 2<sup>nd</sup> Edition.

Model(s)	Manufacturer of enclosure	Model name of enclosure	Minimum thickness (mm)
98803, 98815, 98804, 98821, 20857, 28128, 10239, 10234, 99819, 98817	CHI MEI CORPORATION	PA-765B+ (UL File# E56070)	2.5
88853, 28126	Aluminum Case		

9. The end use application shall consider the need for the following markings and instructions or equivalent for the safe use of the battery pack:

Marking:

"Replace battery with (battery Recognized Company or end product manufacturer's name, part number) only. Use of another battery may present a risk of fire or explosion."

or "See Operating or maintenance Instructions for type of battery to be used" or equivalent with instructions for replacement of the correct battery pack provided.

or A symbol indicating the need to refer to the instruction manual may be used instead of the text noted above.

Instructions:

- a. A warning notice with the following or equivalent:

"Caution - The battery used in this device may present a risk of fire or chemical burn if mistreated. Do not disassemble, heat above (manufacturer's maximum temperature limit), or incinerate. Replace battery with (battery manufacturer's name or end product manufacturer's name and part number) only. Use of another battery may present a risk of fire or explosion."

- b. Complete instructions as to how to replace the battery including the following or equivalent statement:

"Dispose of used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire."

## MARKINGS/INSTRUCTIONS:

All markings shall be legible and permanent such as ink stamped, etched, adhesive labels, etc. All adhesive labels shall be R/C (PGDQ2) component marking and labeling systems or printed on R/C (PGJI2) Component Printing Materials.

Nameplate Marking - The Recognized Company, file number, trade name, trademark or other descriptive marking, catalog or model number, electrical rating, and Recognition Marking, and Recognition Marking for Canada.

Date of Manufacturer Marking - The batteries/packs shall be marked with the manufacturer's date of manufacture, which may be abbreviated; or may be in a nationally accepted conventional code; or in a code that does not repeat in less than 10 years.

The date code consists of the following:

## YYYYMM:

YYYY represents the year of manufacture of products;

MM represents the month of manufacture of products.

For example, 201512 represents that this battery power bank is manufactured on December, 2015.

Cautionary Markings/Instructions - Each 1) battery pack; or 2) the smallest unit package, must be marked with; or 3) instructions provided with each battery, must include the following statements or equivalent:

- a. An attention word such as "CAUTION", "WARNING", or "DANGER", and a brief description of possible hazards associated with mishandling of the battery pack such as burn hazard, fire hazard, explosion hazard, and
- b. A list of actions to take to avoid possible hazards, such as do not crush, disassemble, dispose of in fire, or similar actions.
- c. Instructions regarding replacement batteries.

A Rechargeable Lithium Polymer Battery pack shall be marked with the following or equivalent: "CAUTION: Risk of Fire and Burns. Do Not Open, Crush, Heat Above (manufacturer's specified maximum temperature) or Incinerate. Follow Manufacturer's Instructions." This wording or equivalent shall also be included in the instructions packaged with the battery pack.

Charging Marking/Instructions - Recommended charging information is also provided on the product, its smallest packaging unit, or the instructions provided with each battery pack.

The charging limits as outlined in the Manufacturer's Recommended Charging Parameters Table above are provided as part of these instructions.

CIRCUIT BOARDS AND INTERNAL WIRING:

All circuit boards employed in the assembly are R/C (ZPMV2) rated V-1 minimum, 130°C, except as described in this report.

Rechargeable Li-ion Battery, Model(s): 98803, 98815, 98804, 98821, 20857, 28128, 88853, 10239, 10234, 99819, 98817, 28126; Fig. 1 thru Fig.12 and Ill.1 thru Ill.13 for additional views of overall battery constructions.

1. Cell(s) - See tables and information below:

Battery Pack Model	Cell Manufacturer	Cell Model	R/C Cells, Y or N*	File Reference,	
				File No.	Report Date
--	--	--	--		
All models	JIANGXI FIRST NEW ENERGY CO LTD	FST18650- 2200mAh	Y	Mh48852	2012-06-07
Note: See Cell Chemistry and Configuration Table at beginning of report for information on type of cells, number of cells and their configuration in the battery pack circuit.					

Connections to cell terminals are constructed as noted below:

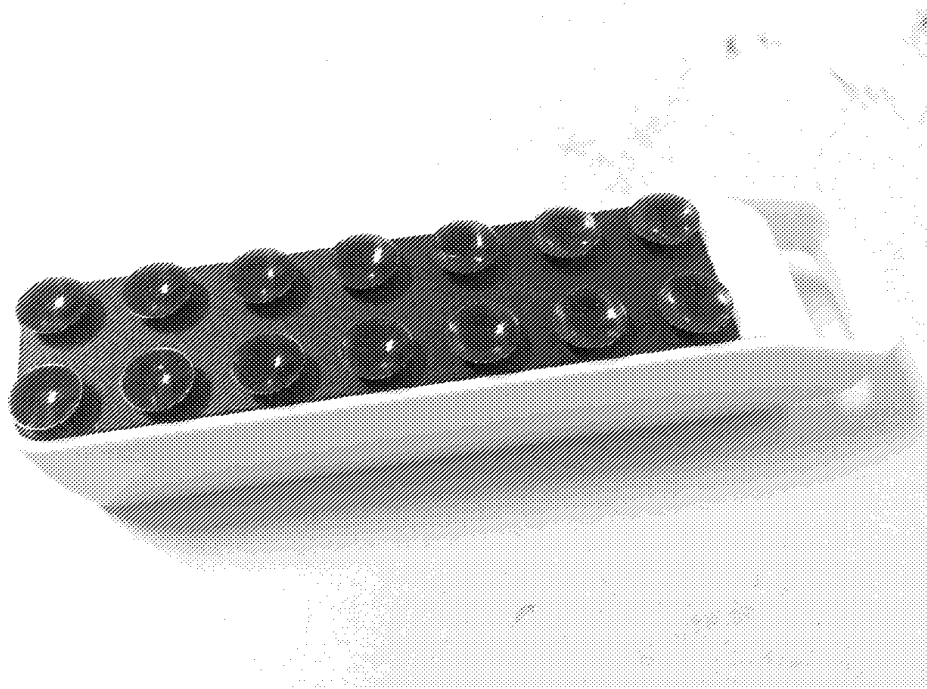
Pack Model No.	Description	Ills. No. or description
All models	Connected by metal tabs and soldered to PWB	Directly soldering to the PWB. Refer to Fig. 25 and Fig. 27

## 2. Protective Circuitry - Consists of the following Components:

Battery Pack Model No.	Type of Protective Component	Location of Component Within Pack	Component Manufacturer	Component Part No.	Component Ratings
All models	Control IC (U1)	PWB	RZC	RZC6291	Vdd: 2.6V-5.5V, output current: 2A
	Control IC (U3)	PWB	RZC	DW01AM	Vcc: 3.9V, Max. ICC: 6.0 uA
	Diode (D3)	PWB	SHANGHAI MICROELECTRONICS CO., LTD.	SS34	40V, 3A
	MOSFET (Q3)	PWB	RZC	SST8205S	VDS:20 V, Id: 6A
	Inductor (L1)	PWB	Interchangeable	Interchangeable	3.3uH

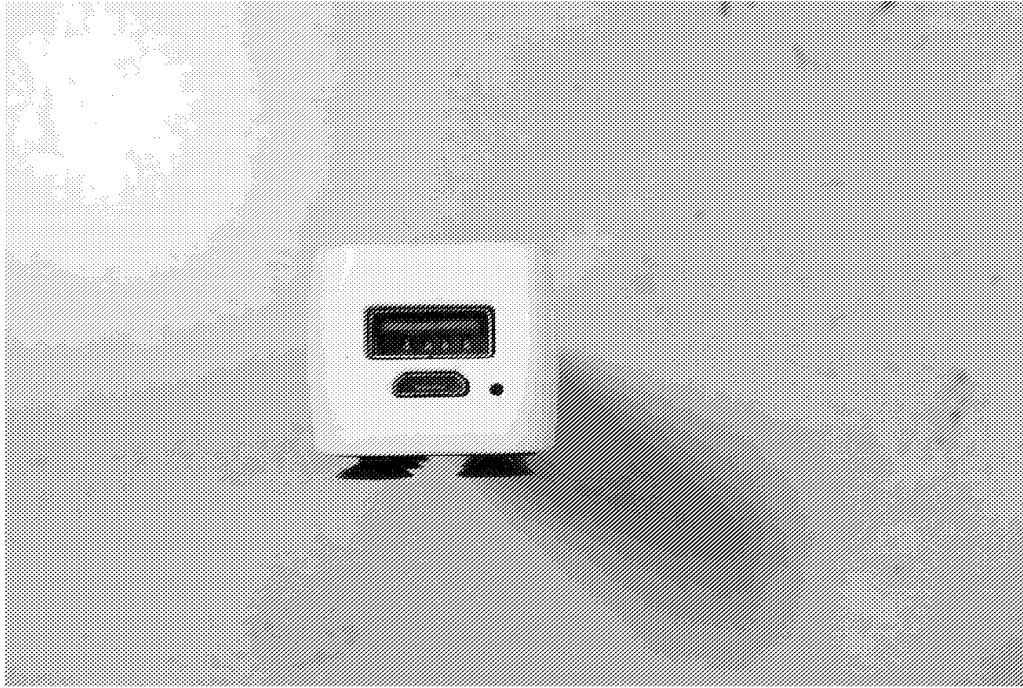
3. Printed Wiring Board (PWB) - R/C (ZPMV2), Min. V-1, 130 degree C.
4. Insulation mylar (labeling)- R/C (PGDQ2 or PGJI2) , Minimum VTM-1, minimum 75 degree C.
5. Plastic material - R/C (QMFZ2), marked 'Flame Retardant', or evaluated for flammability minimum V-2 or VTM-2 as applicable, or total volume is less than 2cm<sup>3</sup>.
6. Leading wire - R/C (AVLV2), rated: minimum 24 AWG, minimum 100 Degree C

**Model: 98817**

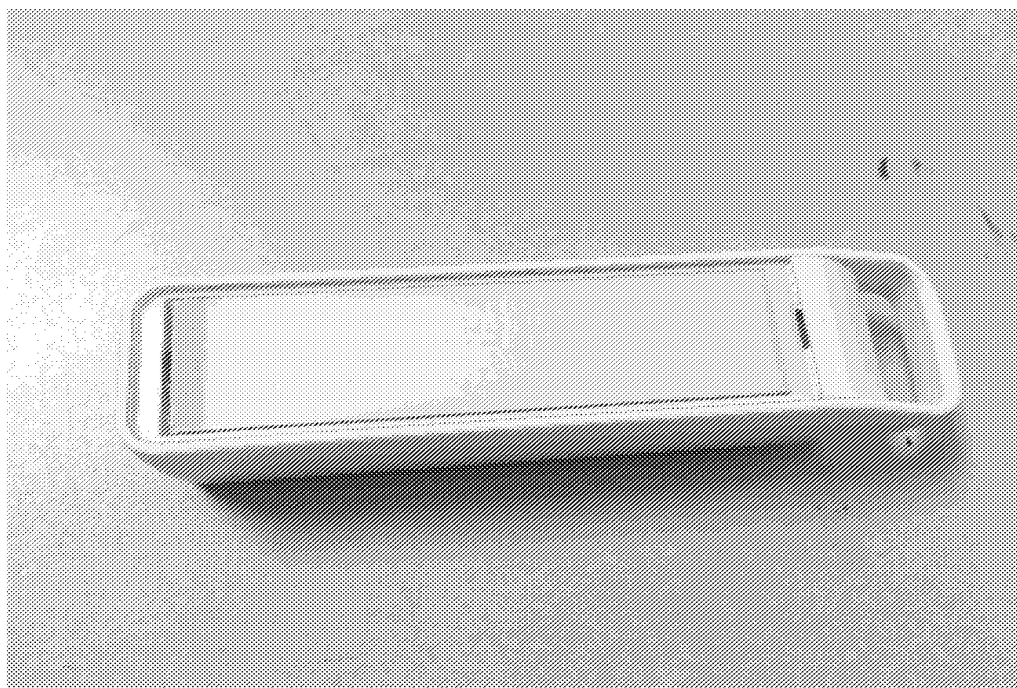


N161447381





N161447381

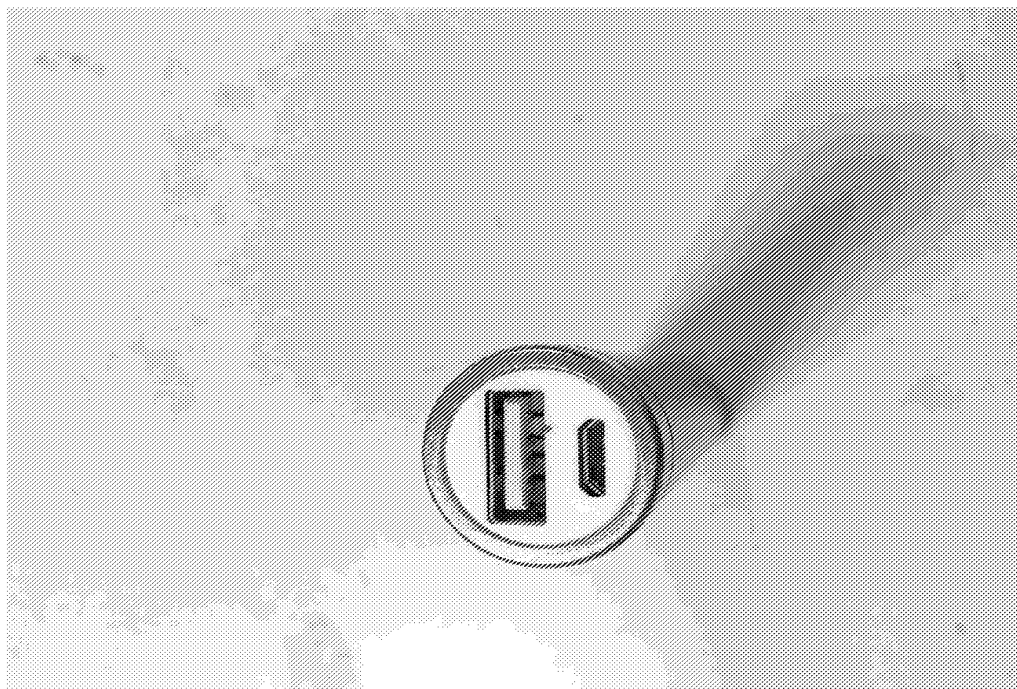


N161447381

**Model: 88853**



N161447385

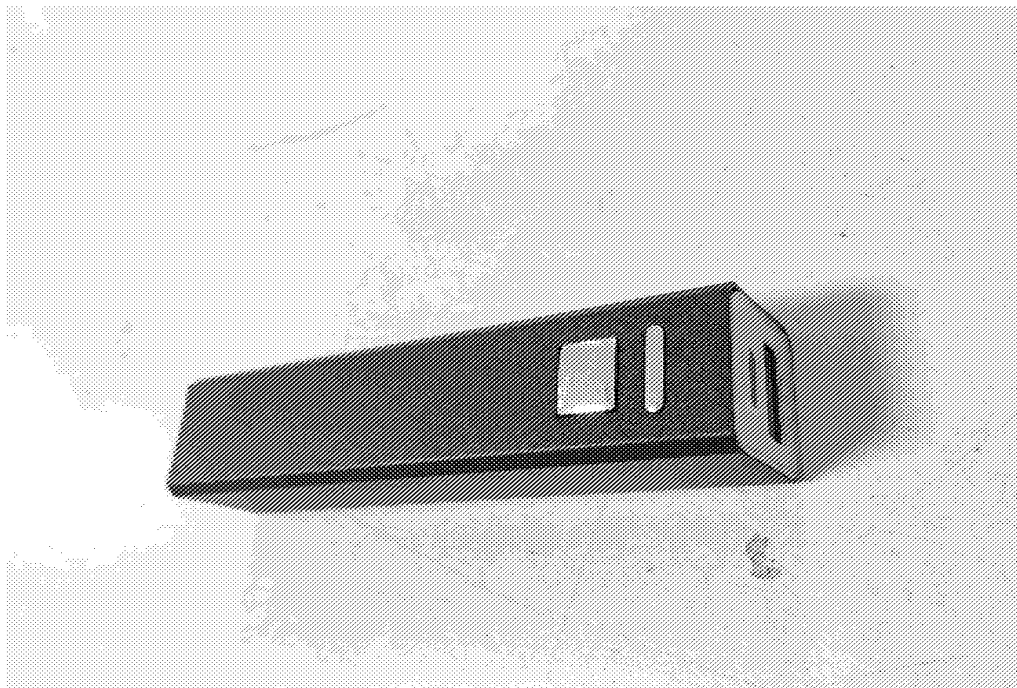


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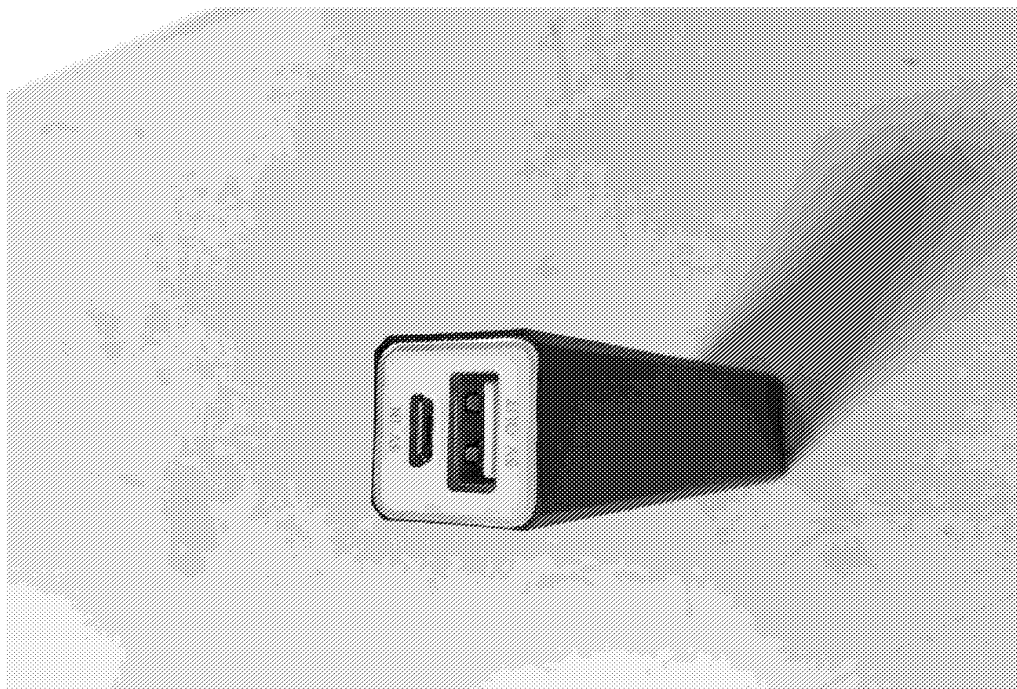


N161447385

**Model: 28126**

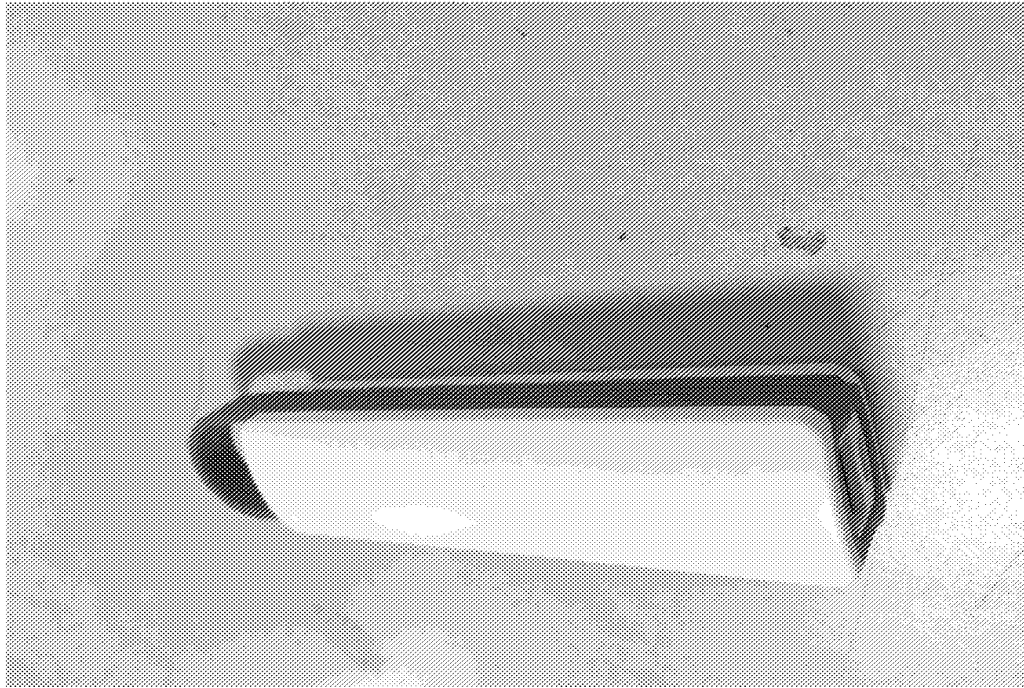


N161447386



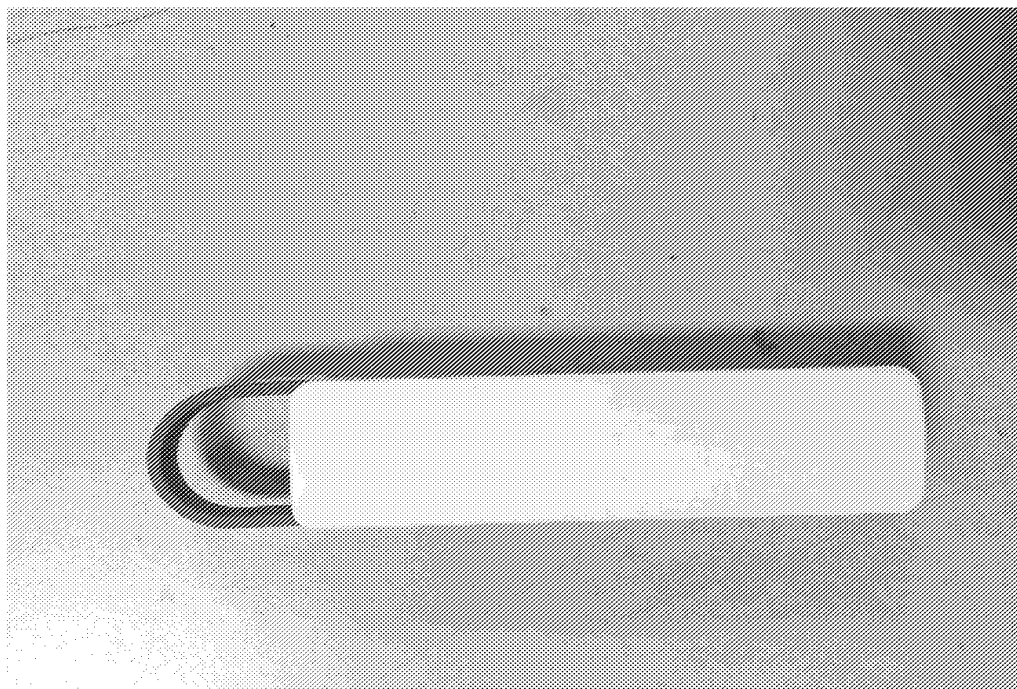
N161447386

**Model: 98821**



N161447387





N161447387

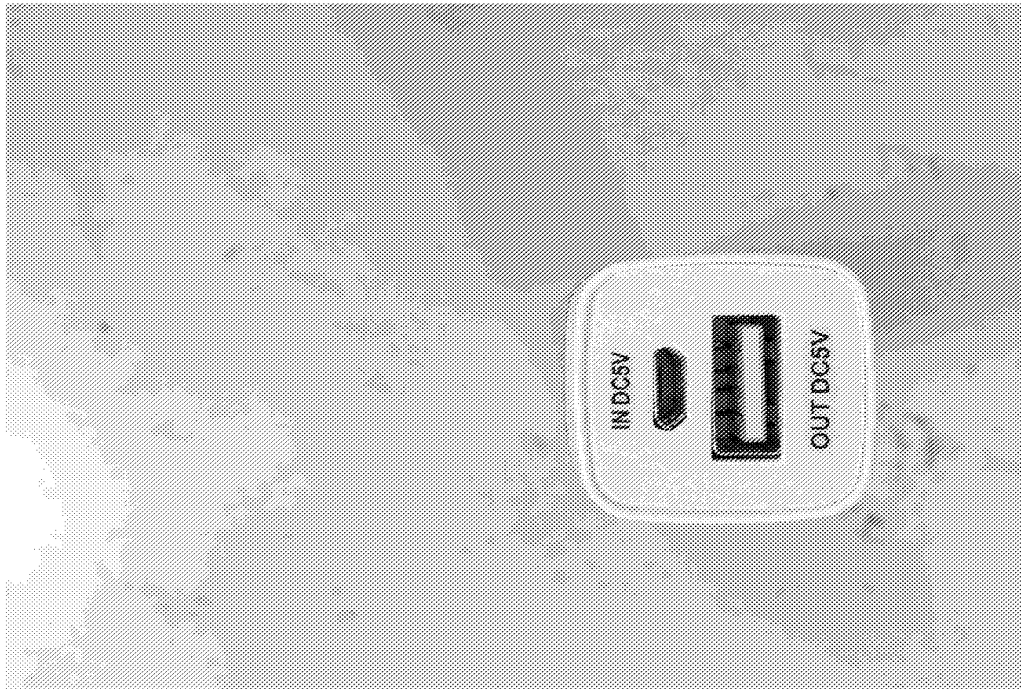


N161447387

**Model: 28128**



N161447388

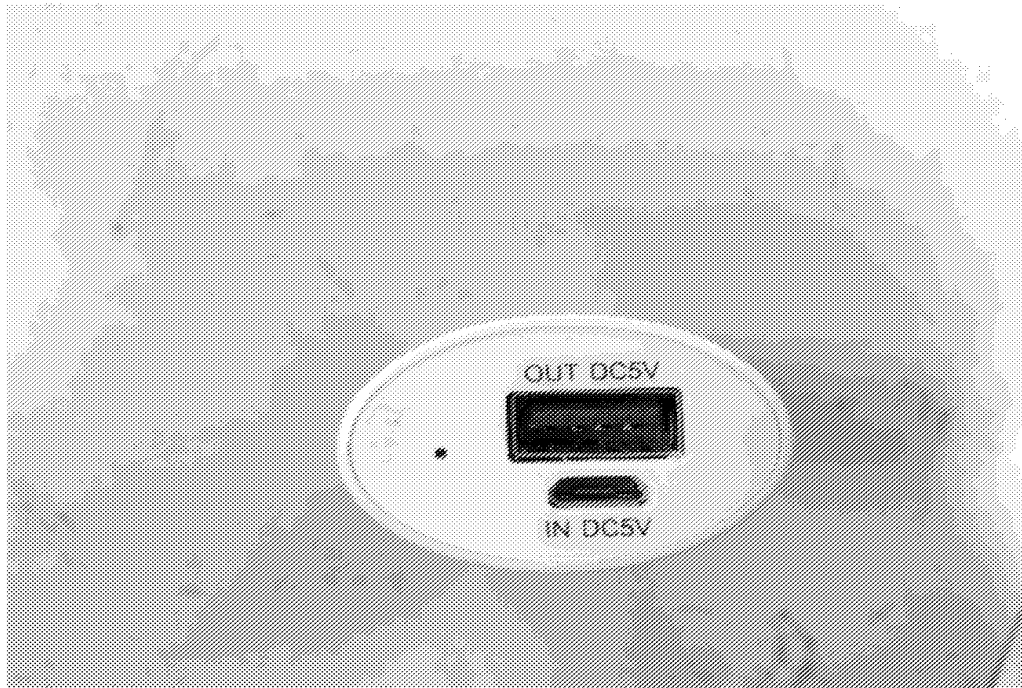


N161447388

**Model: 98803**

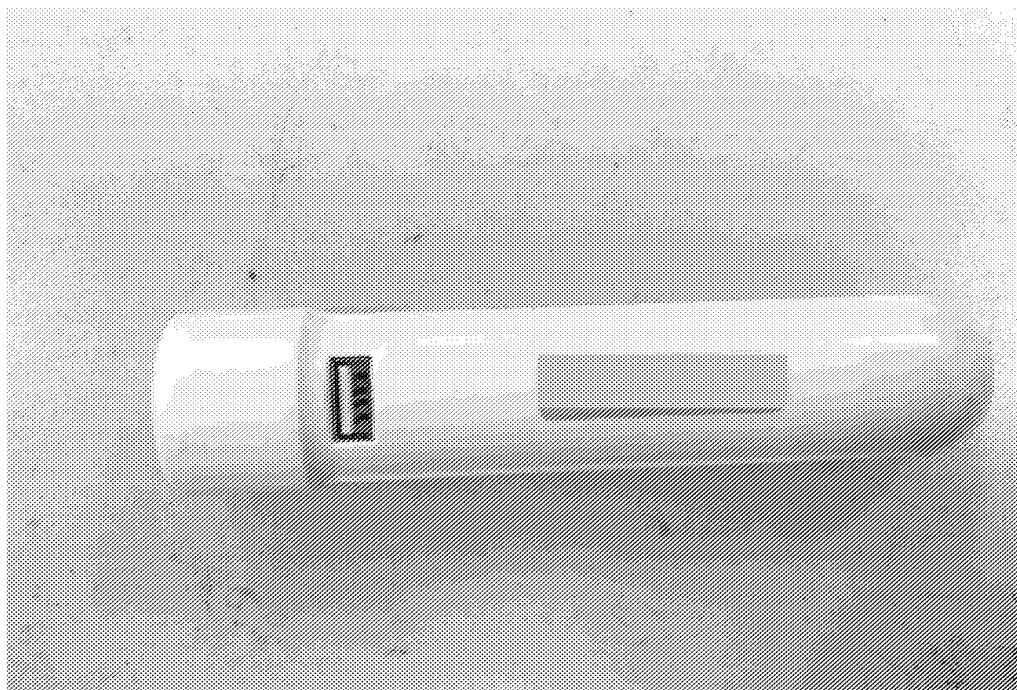


N161447389



N161447389

**Model: 10234**



N161447390



N161447390



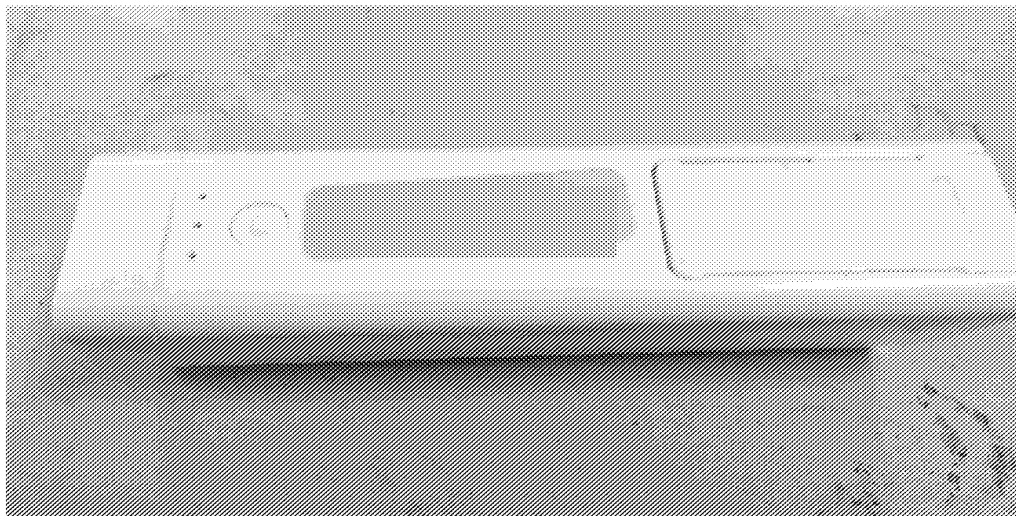


N161447390

**Model: 10239**



N161447391

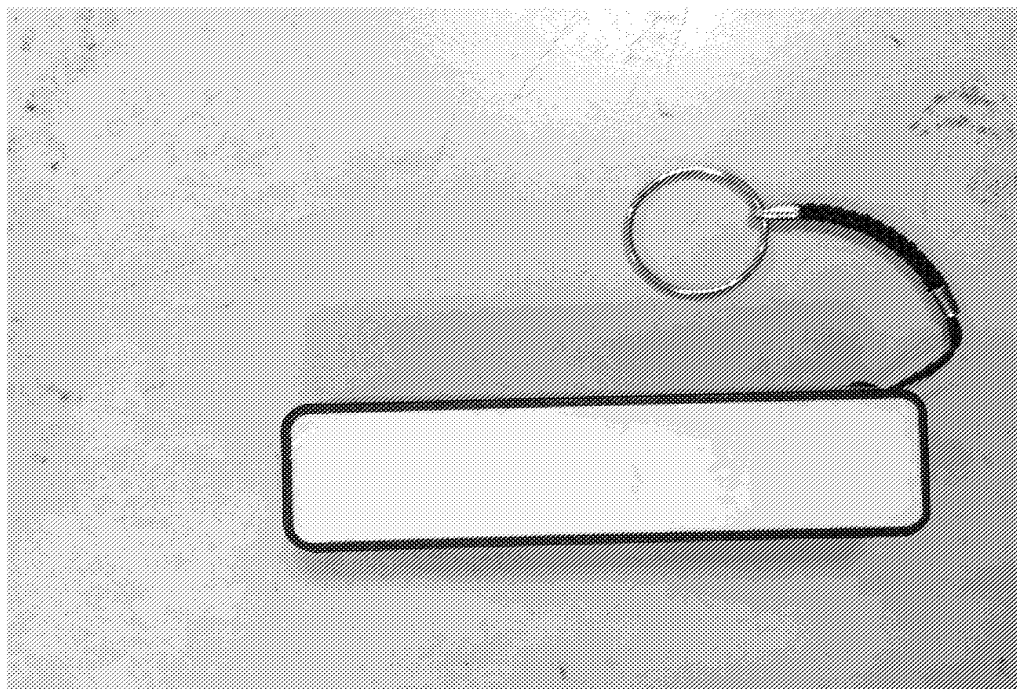


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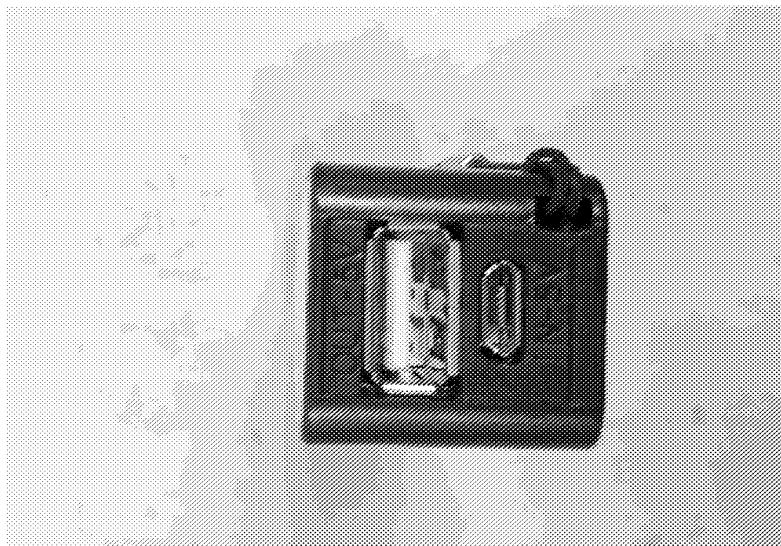
**Model: 20857**



N161447392

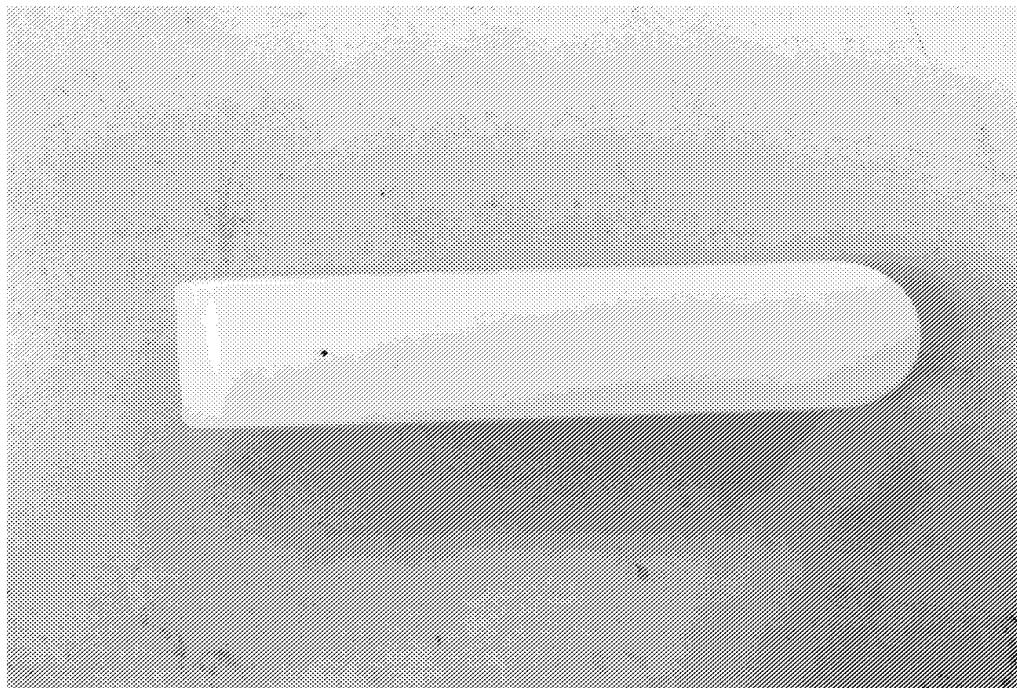


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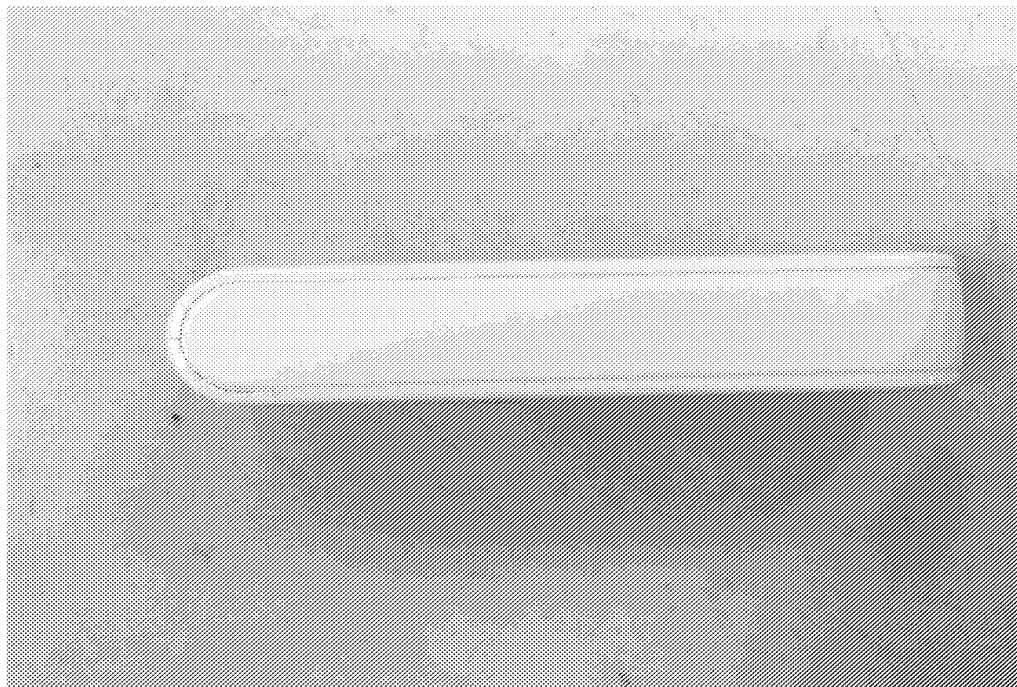


N161447392

**Model: 98815**



N161447382



N161447382

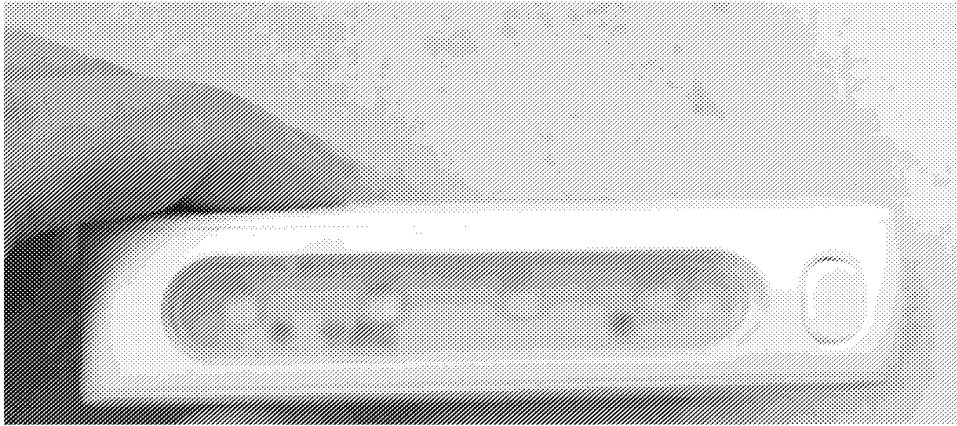




N161447382

**Model: 99819**

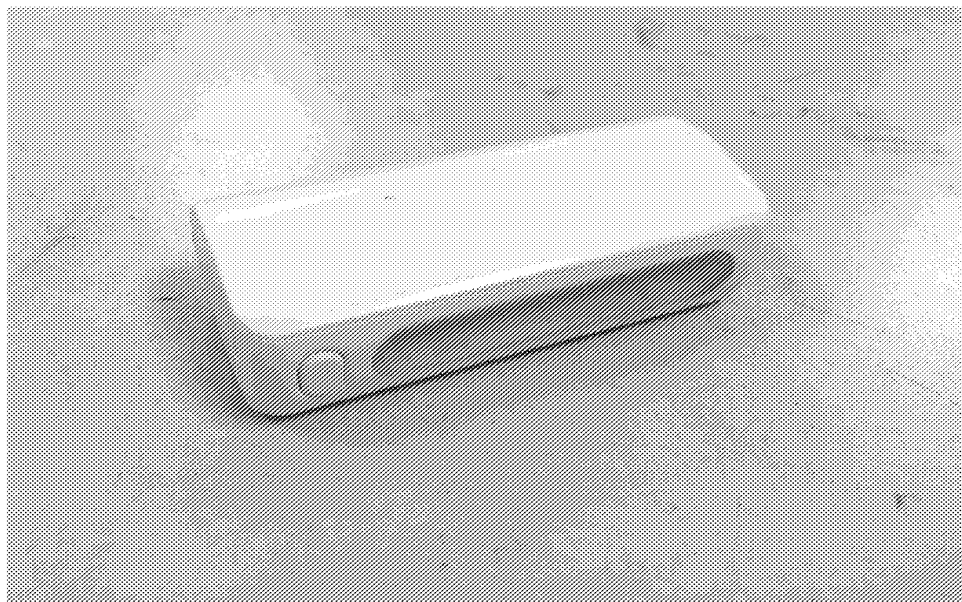




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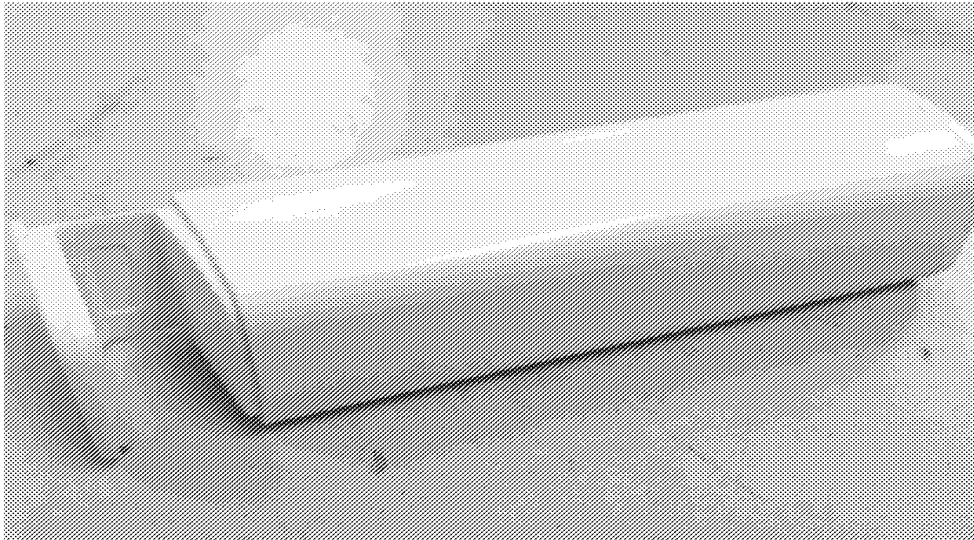


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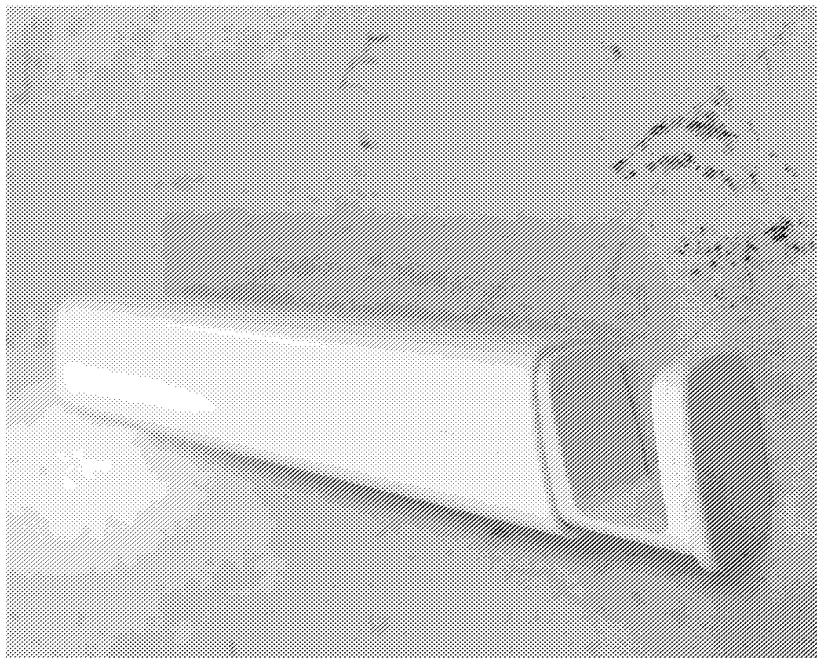


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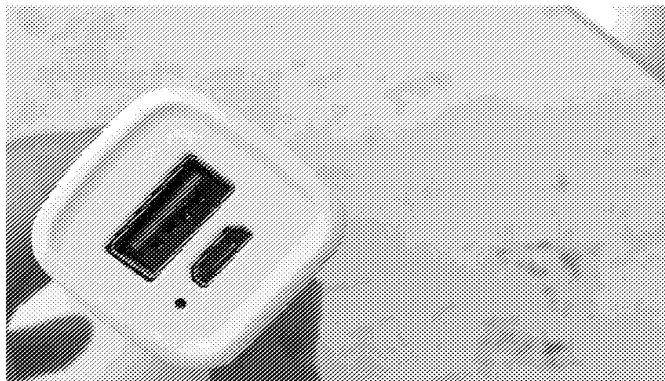
**Model: 98804**



N161447384



N161447384



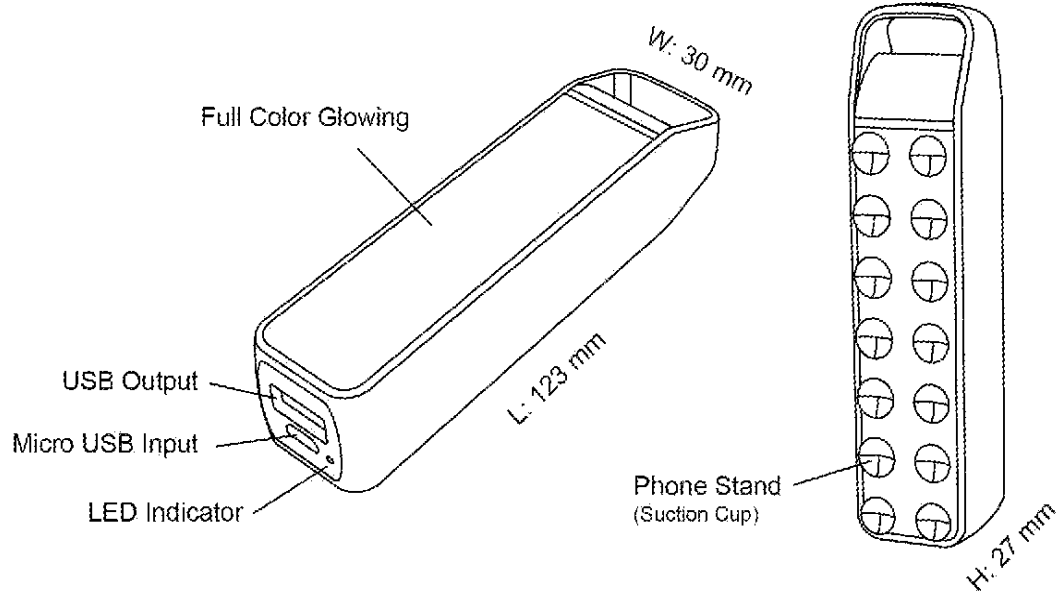
N161447384



Construction (unit: mm):

**MODEL: 98817**

• **Power Bank**



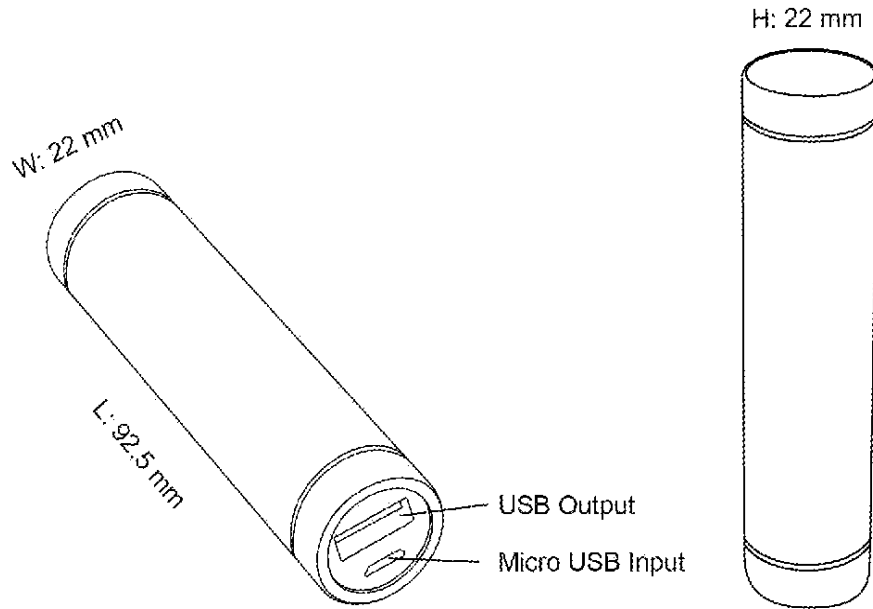
Dimensions: Length\*Width\*Height: 123mm\*30mm\*27mm

N161447409

Construction (unit: mm):

**MODEL: 88853**

● **Power Bank**



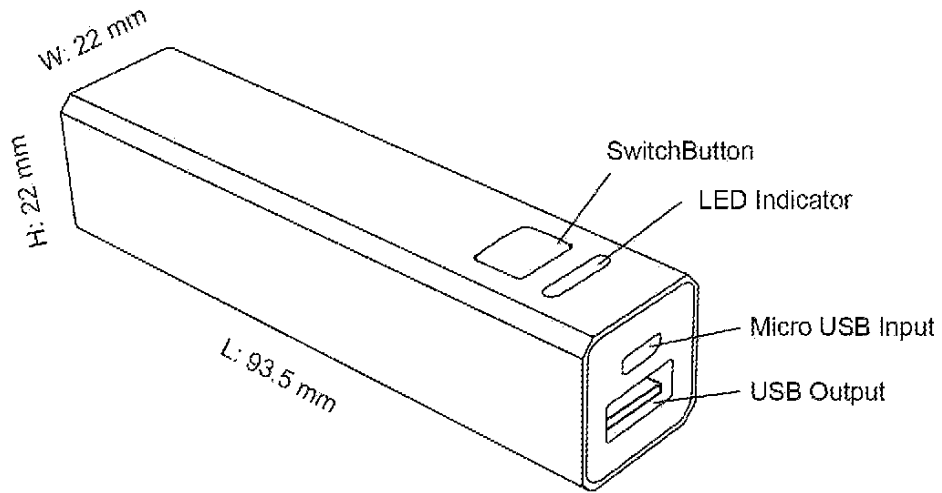
Dimensions: Length\*Width\*Height: 92.5mm\*22mm\*22mm

N161447421

Construction (unit: mm):

**MODEL: 28126**

## • Power Bank



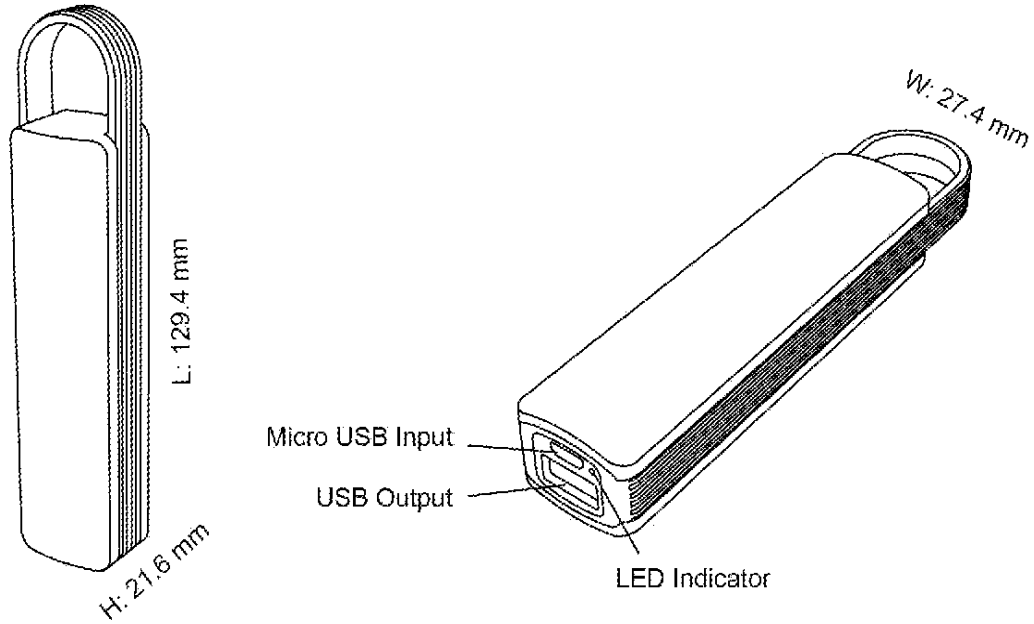
Dimensions: Length\*Width\*Height: 93.5mm\*22mm\*22mm

N161447424

Construction (unit: mm):

**MODEL: 98821**

• **Power Bank**



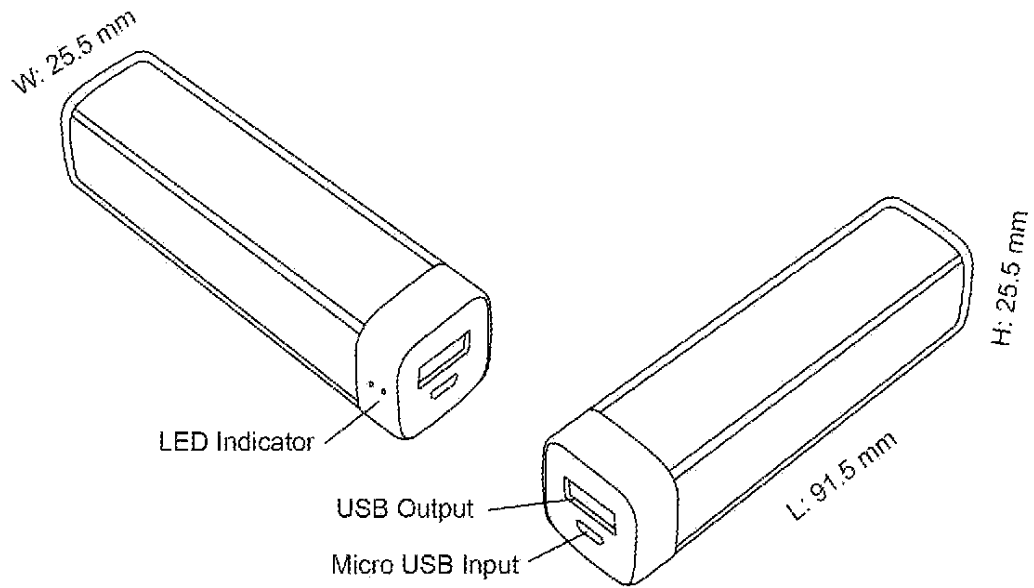
Dimensions: Length\*Width\*Height: 129.4mm\*27.4mm\*21.6mm

N161447426

Construction (unit: mm):

**MODEL: 28128**

## • Power Bank



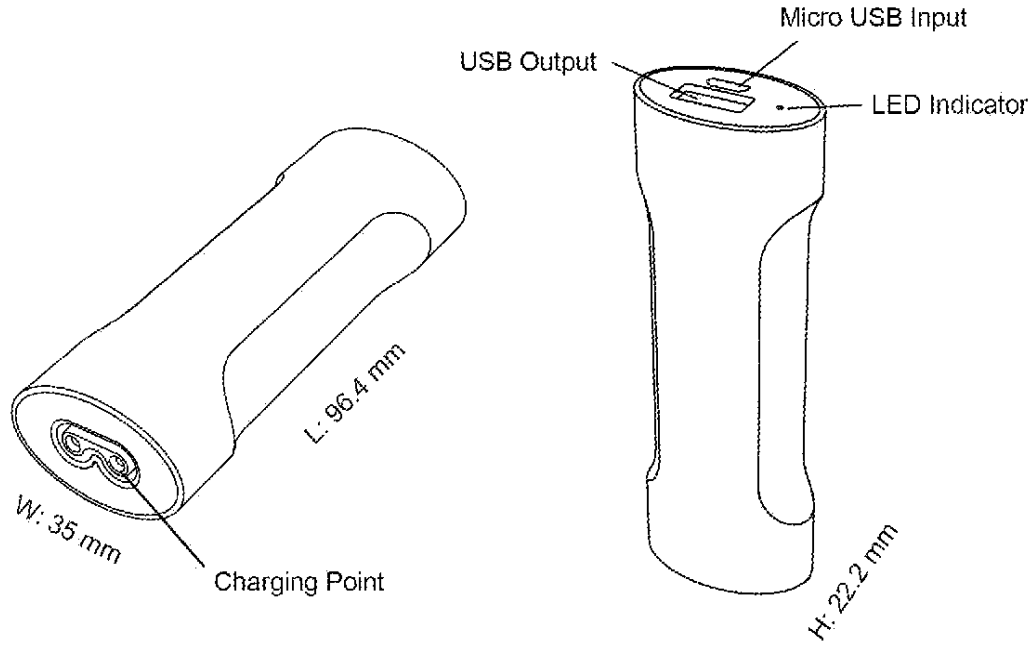
Dimensions: Length\*Width\*Height: 91.5mm\*25.5mm\*25.5mm

N161447428

Construction (unit: mm):

**MODEL: 98803**

# ● Power Bank



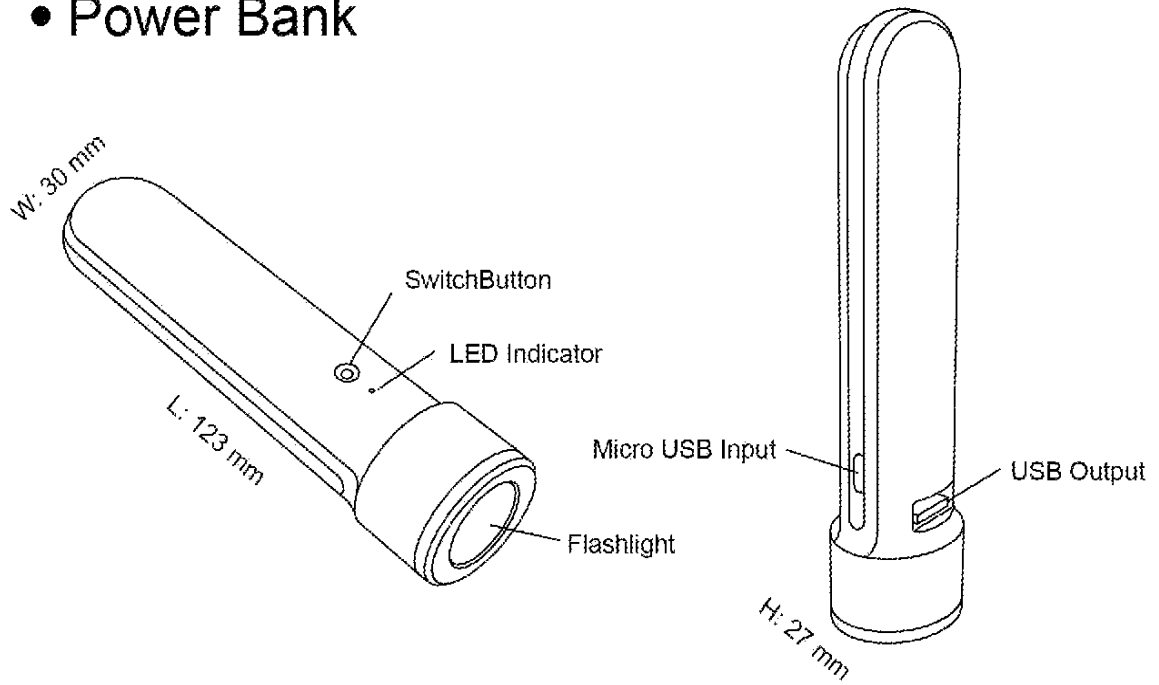
Dimensions: Length\*Width\*Height: 96.4mm\*35mm\*22.2mm

N161447430

Construction (unit: mm):

**MODEL: 10234**

• **Power Bank**



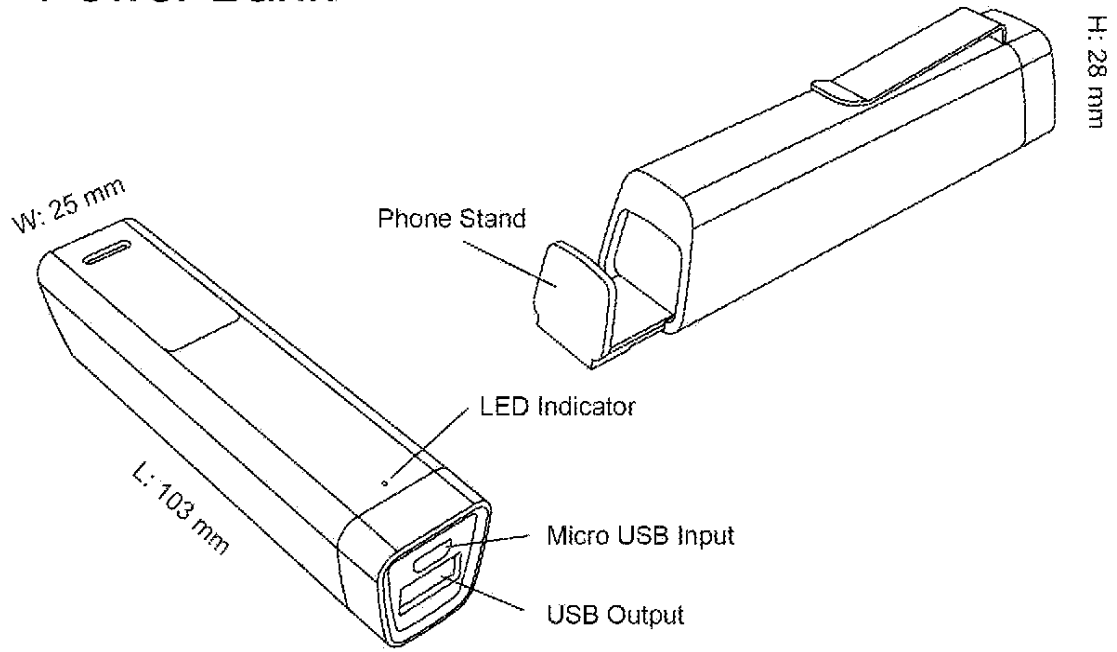
Dimensions: Length\*Width\*Height: 123mm\*30mm\*27mm

N161447432

Construction (unit: mm):

**MODEL: 10239**

• **Power Bank**



Dimensions: Length\*Width\*Height: 103mm\*25mm\*28mm

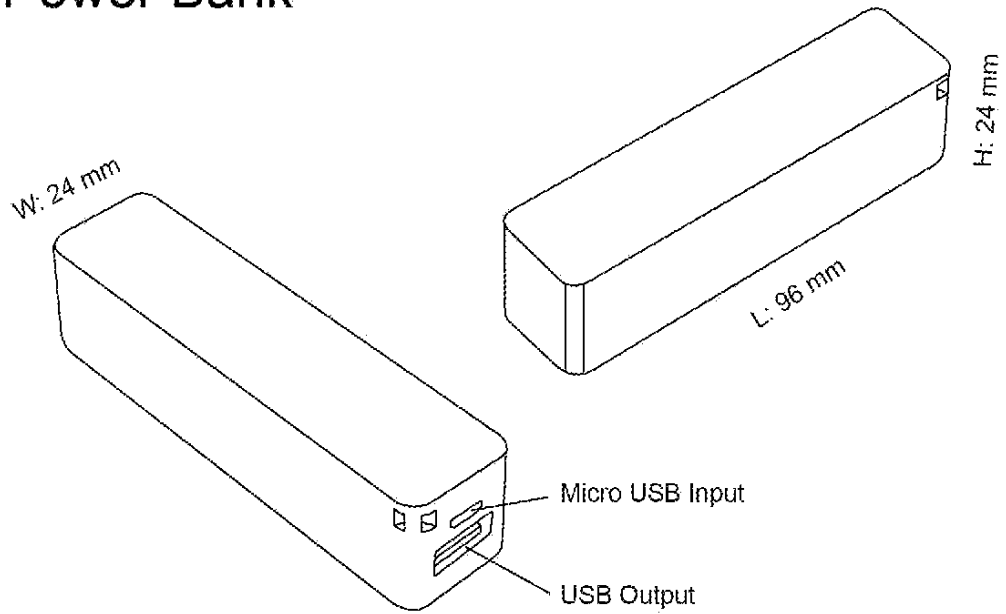
N161447433



Construction (unit: mm):

**MODEL: 20857**

• **Power Bank**



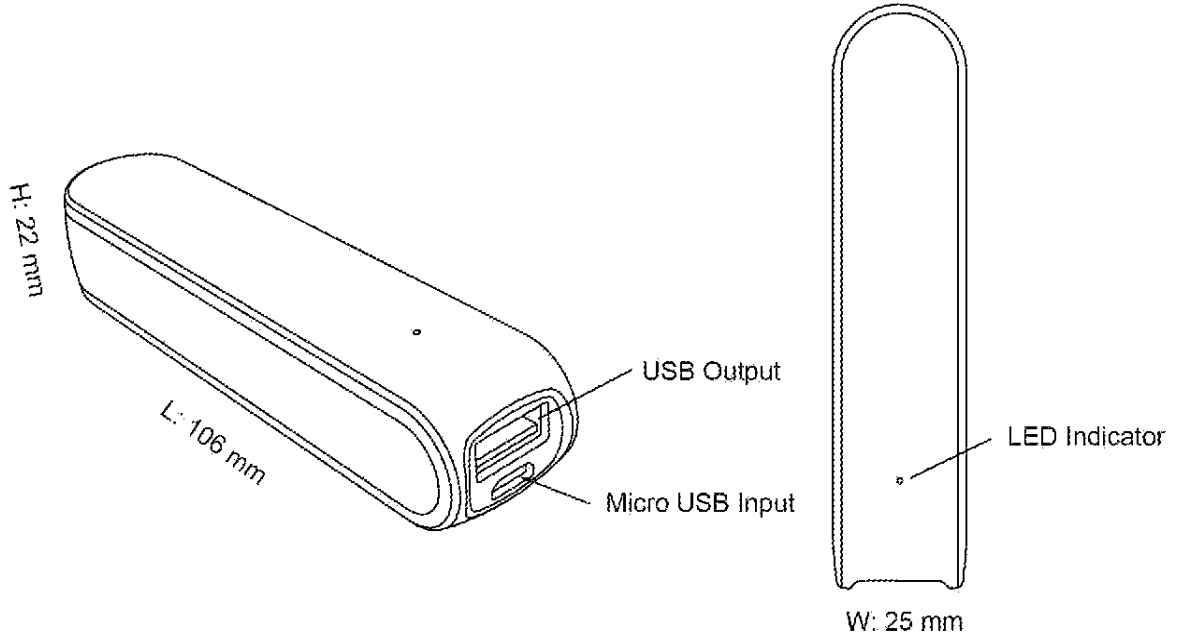
Dimensions: Length\*Width\*Height: 96mm\*24mm\*24mm

N161447434

Construction (unit: mm):

**MODEL: 98815**

• **Power Bank**



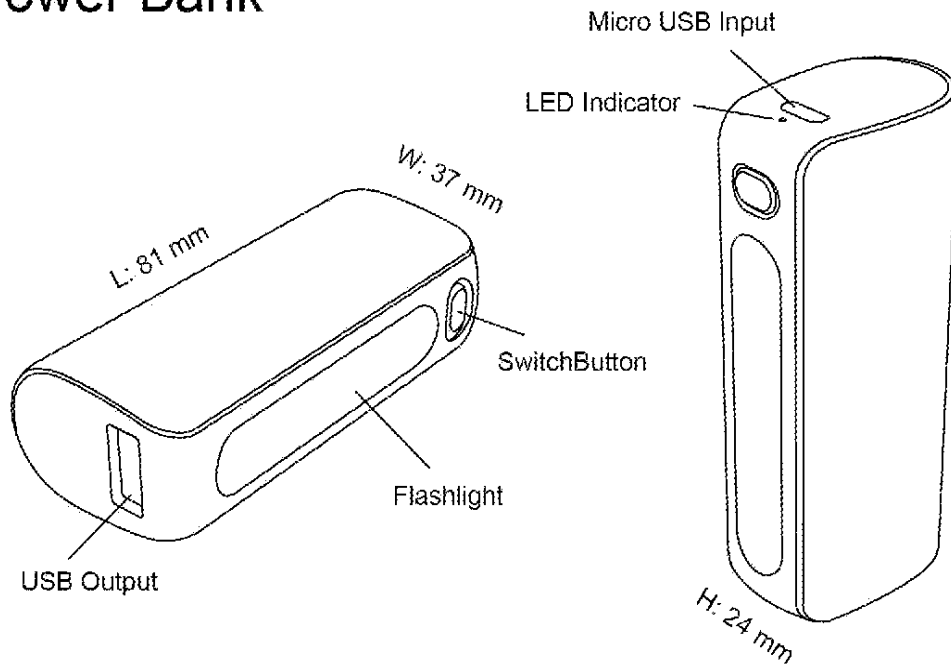
Dimensions: Length\*Width\*Height: 106mm\*25mm\*22mm

N161447411

Construction (unit: mm):

**MODEL: 99819**

• **Power Bank**



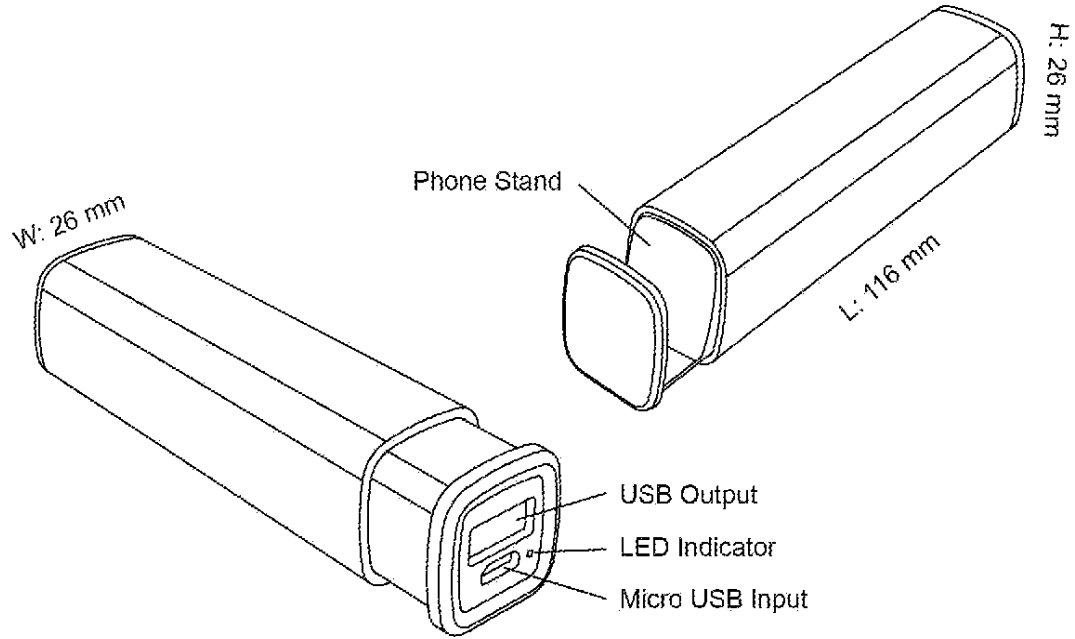
Dimensions: Length\*Width\*Height: 81mm\*37mm\*24mm

N161447413

Construction (unit: mm):

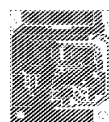
**MODEL: 98804**

• **Power Bank**



Dimensions: Length\*Width\*Height: 116mm\*26mm\*26mm

N161447415



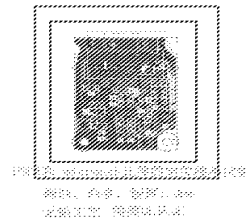
N161447418











N161447418

TEST RECORD NO. 1

## SAMPLES:

Samples of Rechargeable Li-ion battery power bank, Models 98803, 98815, 98804, 98821, 20857, 28128, 88853, 10239, 10234, 99819, 98817, 28126 as indicated below and constructed as described herein, was submitted by the manufacturer for examination and test.

Model No.	Nominal Voltage, V dc	Capacity, mAh	Maximum Charging Voltage, V dc	Maximum Charging Current, mA	Maximum discharge Current, mA	Dis-charge Cutoff Voltage, Vdc	Cell Config xS/yP	Cell Mfg.	Cell Model Number
All models	5	2200	5.5	1000	2000	4.5	1S/1P	JIANGXI FIRST NEW ENERGY CO LTD	FST18650- 2200mAh

## GENERAL:

Test results relate only to the items tested.

All tests were conducted in UL CCIC Suzhou.

The following tests were conducted.

Model	Test Conducted	UL 2054 Section Reference / [X] (UL/CSA60950-1 Section Reference)	Compliant Results? [Y] [N]	Comments
98815	SHORT CIRCUIT TEST - At Room Temperature	9.7 - 9.12	Y	Complying
98815	SHORT CIRCUIT TEST (At 55 C)	9.7 - 9.12	Y	Complying
98815	ABNORMAL CHARGING TESTS: Secondary	10.10 - 10.13	Y	Complying
98815	ABUSIVE OVERCHARGE TEST	11	Y	Complying
98815	LIMITED POWER SOURCE TEST	13	Y	Complying
All models	BATTERY PACK COMPONENT TEMPERATURE TEST LITHIUM ION SYSTEM	13A	Y	Complying
All models	250 N STEADY FORCE TEST:	19	Y	Complying
All models	MOLD STRESS RELIEF TEST:	20	Y	Complying
All models	DROP IMPACT TEST	21	Y	Complying

The test methods and results of the above tests have been reviewed and found in accordance with the requirements in the Standard for Household and Commercial Batteries, UL 2054, Second Edition, including revisions through revision date September 14, 2011.

Test Record Summary:

The results of this investigation indicate that the products evaluated comply with the applicable requirements in the U.S. Standard for Safety of Household and commercial Batteries, UL 2054 Second Edition, including revisions through revision date September 14, 2011, and the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment-Safety-Part1: General Requirements, CAN/CSA-C22.2 No. 60950-1-07, and UL 60950-1, Second Edition, issue dated Dec 19, 2011, and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Reported by,  
Tasia Li  
Engineer Project Associate

Reviewed by,  
Racky Wang (Prime review)  
Engineering manager  
Jenny Wang (Final review)  
Engineer Project Associate

## CONCLUSION

Samples of the components covered by this Report have been found to comply with the requirements covering the category and the components are found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the samples investigated by UL and does not signify the products described as being covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the Recognized Marking on such products which comply with UL's Follow-Up Service Procedure and any other applicable requirements of UL LLC. The Recognized Component Mark of UL LLC on the product, or the Recognized Marking symbol on the product and the Recognized Component Mark on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Recognition and Follow-Up Service.

This Report is intended solely for the use of UL and the Applicant for establishment of UL certification coverage of the product under UL's Follow-Up Service. Any use of the Report other than to indicate that the sample(s) of the product covered by the Report has been found to comply with UL's applicable requirements is not authorized and renders the Report null and void. UL shall not incur any obligation or liability for any loss, expense, or punitive damages, arising out of or in connection with the use or reliance upon the contents of this Report to anyone other than the Applicant as provided in the agreement between UL and Applicant. Any use or reference to UL's name or certification mark(s) by anyone other than the Applicant in accordance with the agreement is prohibited without the express written approval of UL. Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Reported by,  
Tasia Li  
Engineer Project Associate

Reviewed by,  
Racky Wang (Prime review)  
Engineering manager  
Jenny Wang (Final review)  
Engineer Project Associate