File MH60484
Project 4787091061

Issued: October 28, 2015
Revised: November 30, 2016

REPORT

On

Batteries, Household and Commercial-**(BBFS)**

Complementary Product Category

Information Technology Equipment
Including Electrical Business Equipment
(NWGQ,NWGQ7)

[redacted]

DESCRIPTION

PRODUCT COVERED:

USL, CNL – Portable Power Bank, Model(s): SP017, IT857, **SP033, 32068**

MODEL DIFFERENCE: Models SP017 is identical to IT857 except for model designation.

MODEL DIFFERENCE: Model SP033 is identical to Model SP017 except for Enclosure, PCB Layout and model designation. Model 32068 is identical to SP033 except for model designation.

ELECTRICAL RATING

Model	Voltage (Nominal)	Capacity (Nominal)	Manufacturer's Recommended Use Ambient
SP017, IT857, **SP033, 32068**	5.0Vdc	2000mAh	0~45°C for Charging, 0~50°C for Discharging

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
SP017, IT857, **SP033, 32068**	454770	lithium ion polymer (soft pouch)	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	Standard Charging Voltage	Maximum Charging Current	Maximum Charging Voltage
SP017, IT857, **SP033, 32068**	550mA	5.0Vdc	600mA	5.3Vdc

GENERAL CONSTRUCTION:

See Section General for general details regarding construction.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVES'S USE):

The output of these battery packs has been determined to be limited power in accordance with second edition of UL 2054 issue dated October 29, 2004 with revisions through and including September 14, 2011.

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

Products designated USL have been investigated using requirements contained in the U.S. Standard for Safety of Information Technology Equipment-Safety-Part1: General Requirements, UL 60950-1, Second Edition, issue dated March 27, 2007, with revisions through and including October 14, 2014.

Products designated CNL have been investigated using requirements contained in the Canadian Standard for the Safety of Information Technology Equipment-Safety-Part1: General Requirements, Canadian Standards Association, CAN/CSA-C22.2 No. 60950-1-07, second Edition, issue dated March 27, 2007, with revisions through and including October 14, 2014.

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 Listee Name, file number(MH60484), trade name, trademark or other descriptive marking; catalog or model number; electrical rating; date of manufacturer; and UL Listing Mark, UL Listing Mark for Canada.

Date of Manufacturer Marking can be identified as following:

S/N: YYMMXXXXXX or YY-MM-XXXXXX
Where, YY for Year, MM for Month. For example, 1412000000 indicates the Power Bank was manufactured in December, 2014.

Factory Location Marking - See Section General for manufacturing location marking.

Cautionary Markings/Instructions - Each 1) battery pack; or 2) he 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. An attention word such as “Accessible surfaces held or touched for short periods only”.

A lithium ion battery pack shall be marked with the following or equivalent: “CAUTION: Risk of Fire and Burns”. Following wording or equivalent shall also be included in the instructions packaged with the battery pack: “CAUTION: Risk of Fire and Burns, don’t open, crush, disassemble and dispose of in fire, Don’t heat above 50°C or Incinerate. Follow Manufacturer’s Instructions.”

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.

Portable Power Bank, Model(s): SP017, **IT857, SP033, 32068** Fig.1 thru Fig.11

See Ill.1 **thru Ill.4** for additional views of overall battery constructions.

1. Cell – See table below:

Battery Pack Model	Cell Manufacturer	Cell Model No.	Recognized Cells, Y or N*	Recognized Cells	
				File No.	Report Date
SP017, IT857, **SP033, 32068**	SHENZHEN DONGLIJUNENG TECHNOLOGY CO LTD	454770	Y	MH48250	2011-04-27
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.					

Cells are located within the pack in a manner that would not result in blocking of vents in the event of cell venting. Cells are secured in their enclosure and prevented from movement that would cause damage to connections and short circuit of parts by:

Pack Model No.	Description	Cell Layout Ills. No.
SP017, IT857	Cell was fitted and secured by Plastic Enclosure.	Fig.3
SP033, 32068	**Cell was fitted and secured by Plastic Enclosure.**	**Fig.10**

Connections to cell terminals are constructed as noted below:

Pack Model No.	Description	Ills. No. or description
SP017, IT857	Cell was connected to PWB by wires	Fig.4
SP033, 32068	**Cell was connected to PWB by wires**	**Fig.11**

2. Battery Pack Enclosure/Case – See Table Below:

Battery Pack Model	Overall Dimensions, L x W x H, mm	Minimum thick-ness, mm	Enclosure Material Manufacturer/ Grade	Enclosure Material Type	Enclosure material flame rating at Minimum Thickness*
SP017, IT857,	See Ill.1 for details	0.6 (Plastic Enclosure)	SABIC (E45329, E121562 or E207780)	CX7240 (GG)	V-1, 70°C
SP033, 32068	See Ill.3 for details	1.0 (Plastic Enclosure)	SABIC (E45329, E121562 or E207780)	CX7240 (GG)	V-1, 70°C
* - V-0, V-1, or compliant with UL746C 20mm Flame Test					

Battery Pack Model	Parts assembling	Secured material Description	Ills. No.
SP017, IT857,	secured by snap-in design, Adhesive and Special screw	Polymeric Adhesive Systems - R/C (QOQW2), Type UT100B, by CEMEDINE CO LTD (E324741), Min. -35~80°C.	Fig.6 and Fig.3
SP033, 32068	secured by snap-in design and Adhesive	Polymeric Adhesive Systems - R/C (QOQW2), Type UT100B, by CEMEDINE CO LTD (E324741), Min. -35~80°C.	Fig.10

3. Protective Circuitry – Consists of the following:

Battery Pack Model No.	Type of Protective Component	Location of Component Within Pack	Component Manufacturer	Component Part No.	Component Ratings
SP017, IT857, **SP033, 32068**	IC (U1)	PWB	VIIHOT	VT5017	--
	IC (U2)	PWB	VIIHOT	VT5353	--
	IC (U3)	PWB	Fitipower Integrated Technology lnc	FP6715	--
	Inductor (L1)	PWB	Various	Various	3.3uH 1.5A

See the following illustrations for details of protective circuitry:

Battery Pack Model Number	Illustration Number
SP017, IT857	Ill.2
SP033, 32068	**Ill.4**

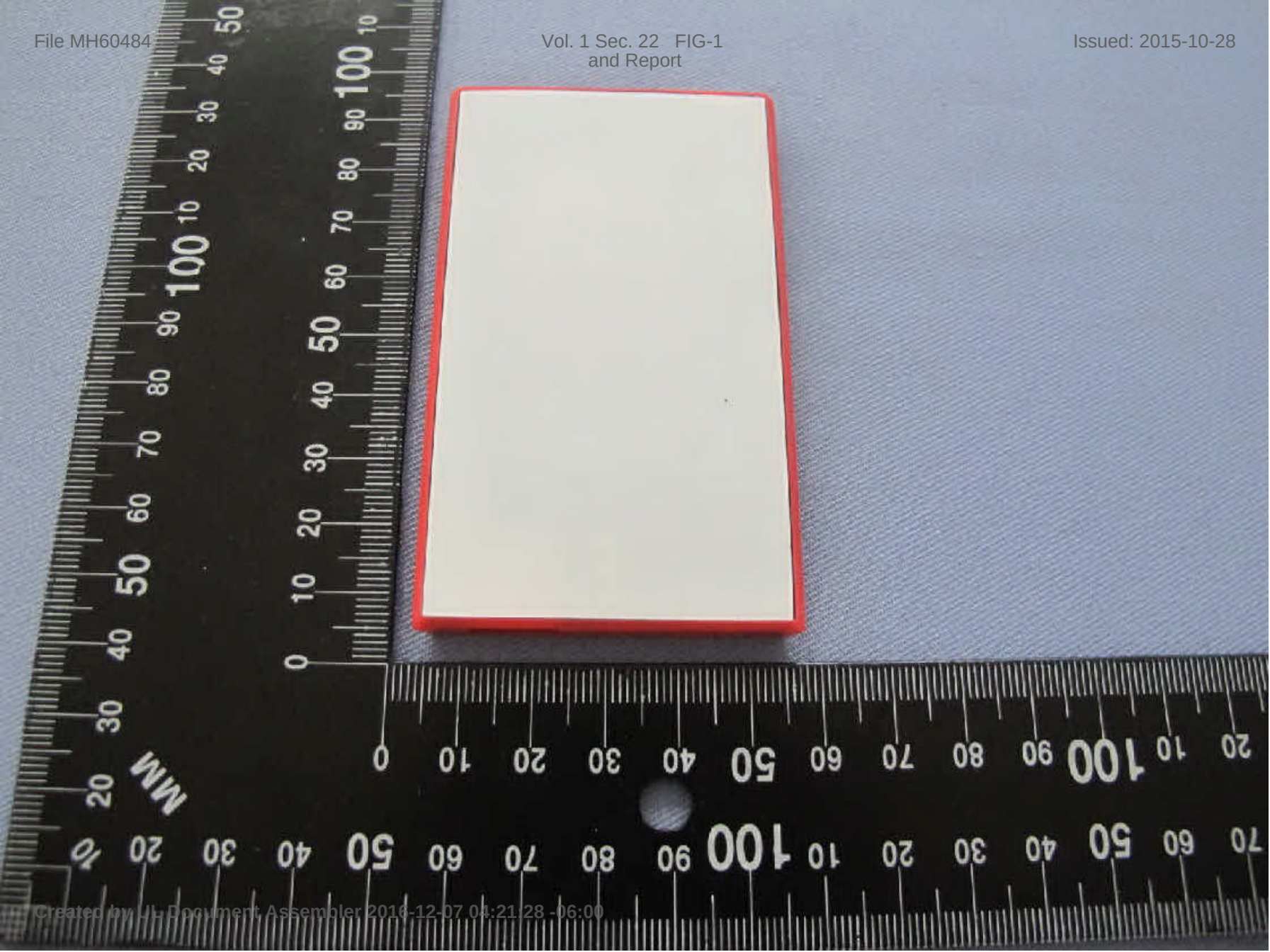
4. External Connector – Constructed as noted below:

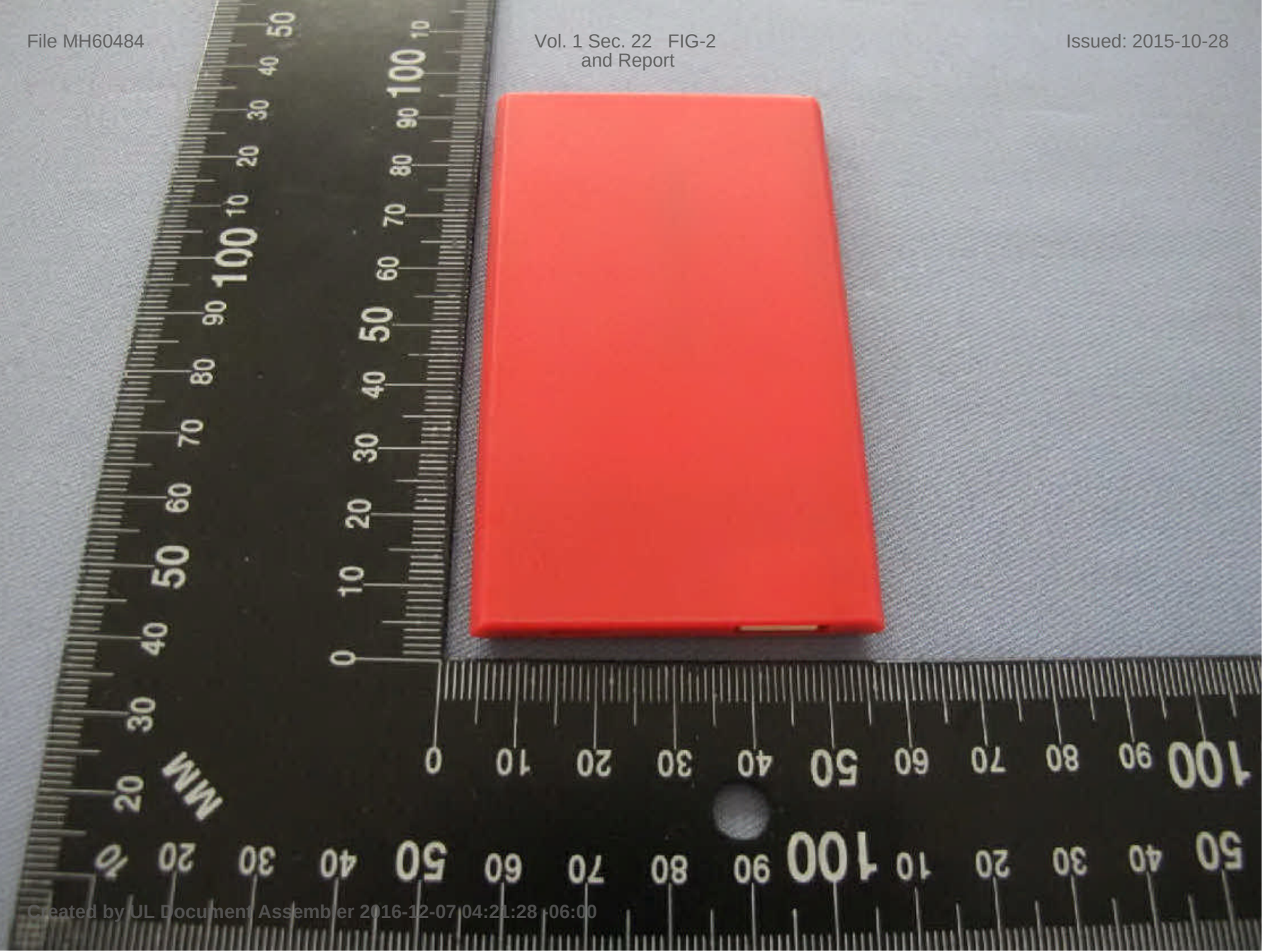
Battery Pack Model Number	R/C Connector Manufacturer	R/C Connector Part Number	Illustration No.
SP017, IT857	--	--	Fig.4
SP033, 32068	**--**	**--**	**Fig.11**

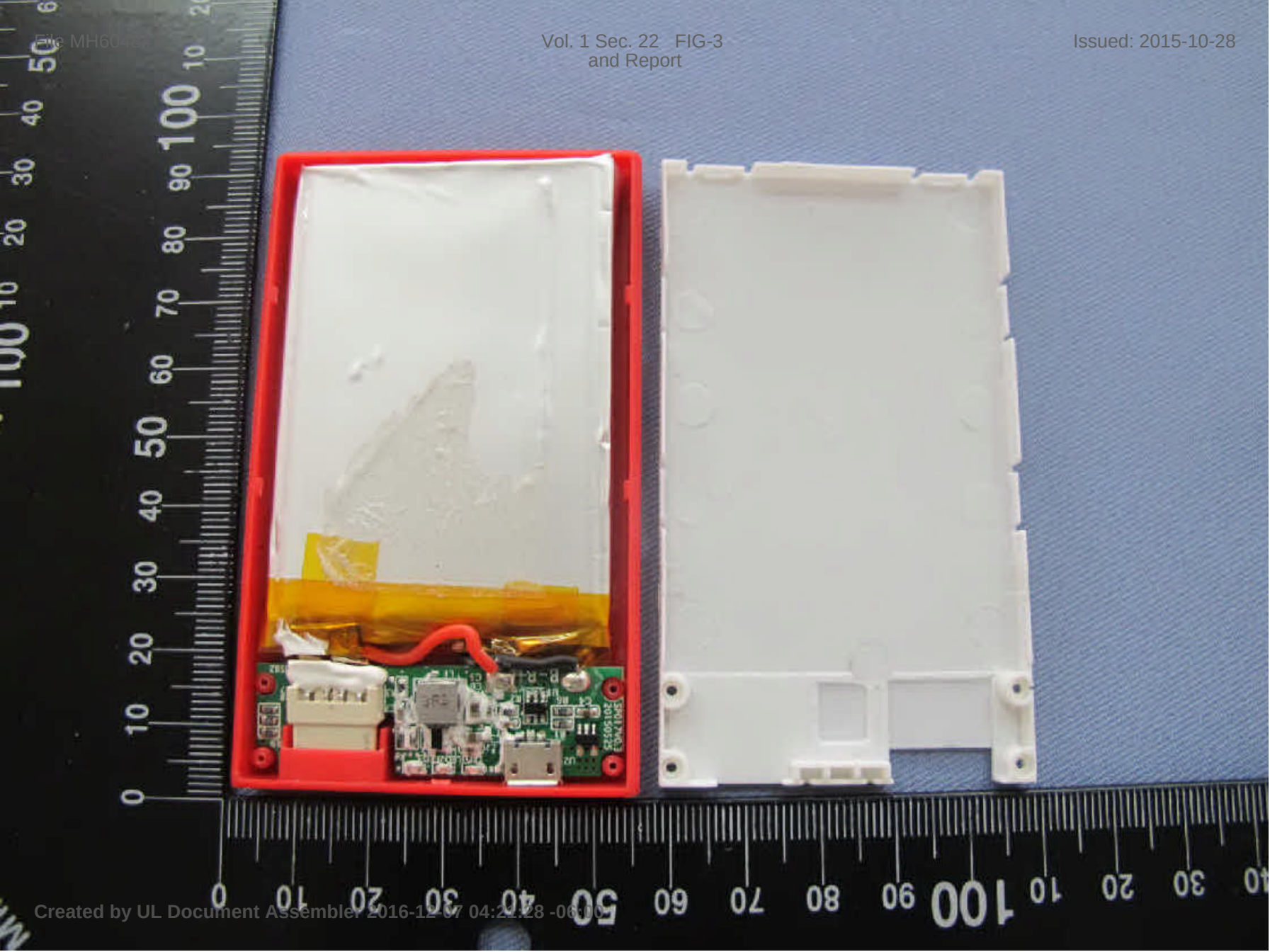
5. Insulation – R/C (OANZ2), located between cell and other parts, minimum 105 degree C or designated “Flame Retardant”. Except for less than or equal to 2 cm3.

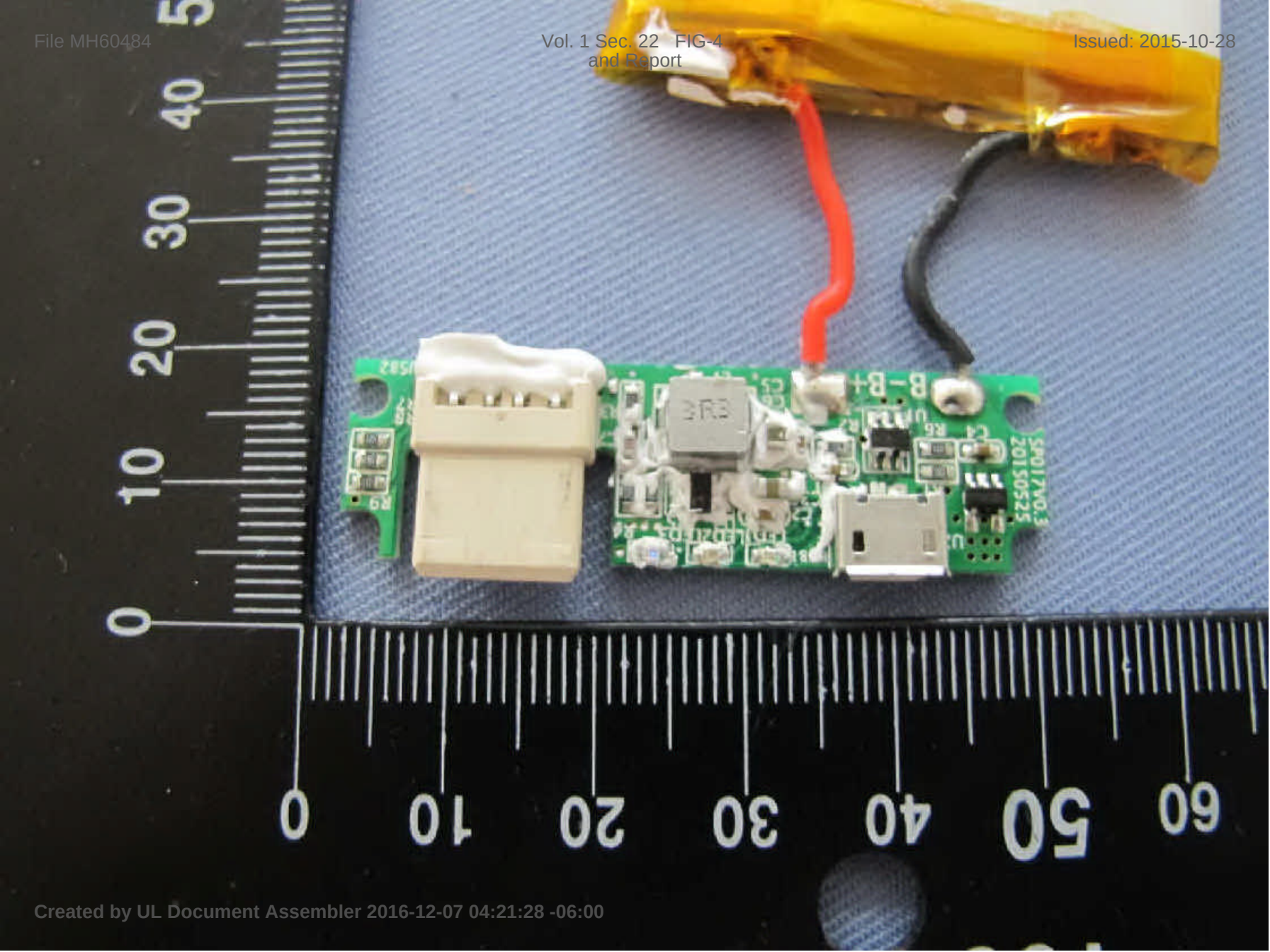
6. Printed Wiring Board – R/C (ZPMV2), Min. V-1, Min. 105°C.

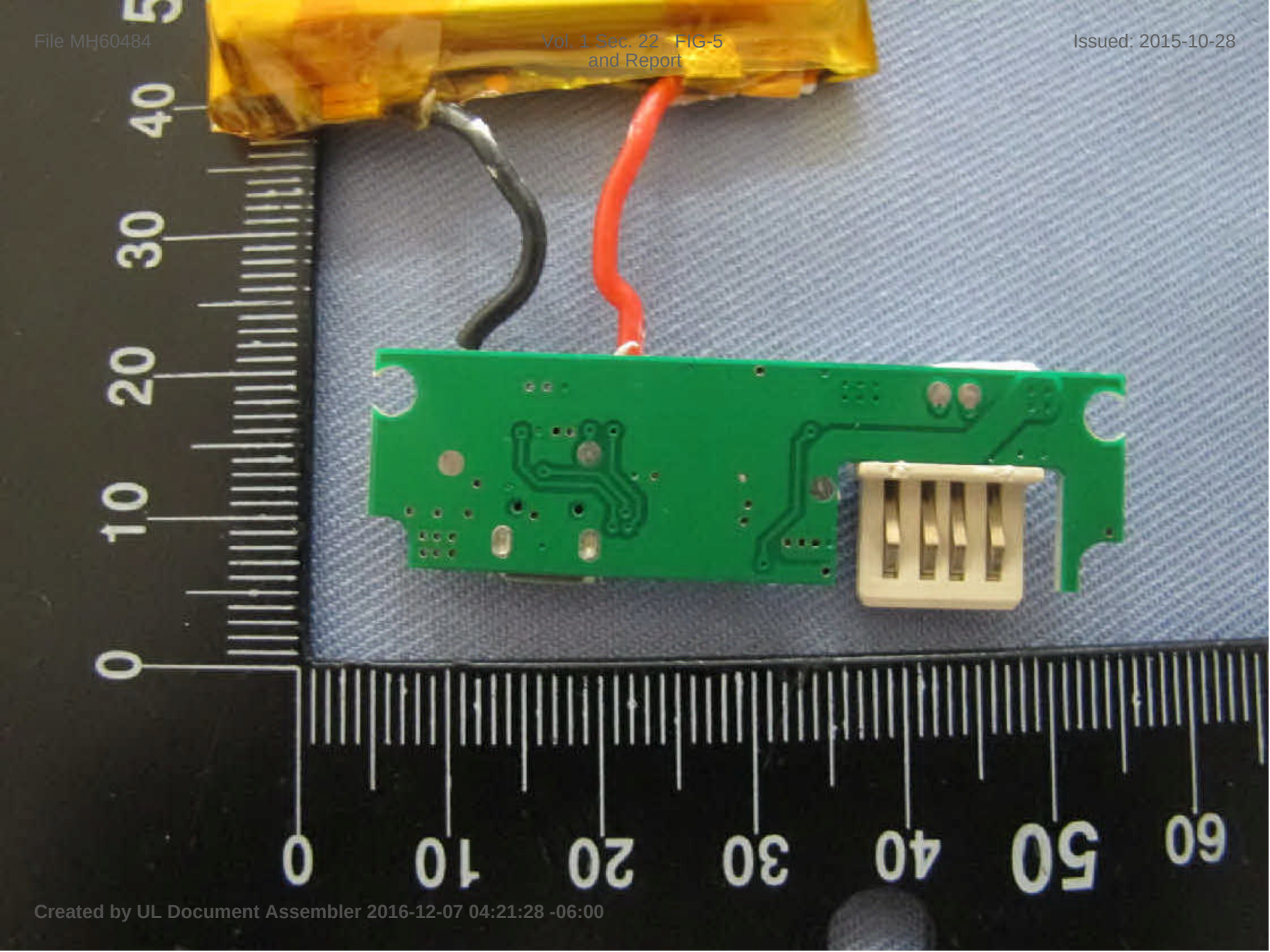
7. Lead Wires - – R/C (AVLV2), Routed away from sharp edges, moving parts. Rated minimum 105 degree C, 30 V, minimum 24 AWG, FEP, PTFE, PVC, TFE, neoprene, or surface marked VW-1 or FT-1.

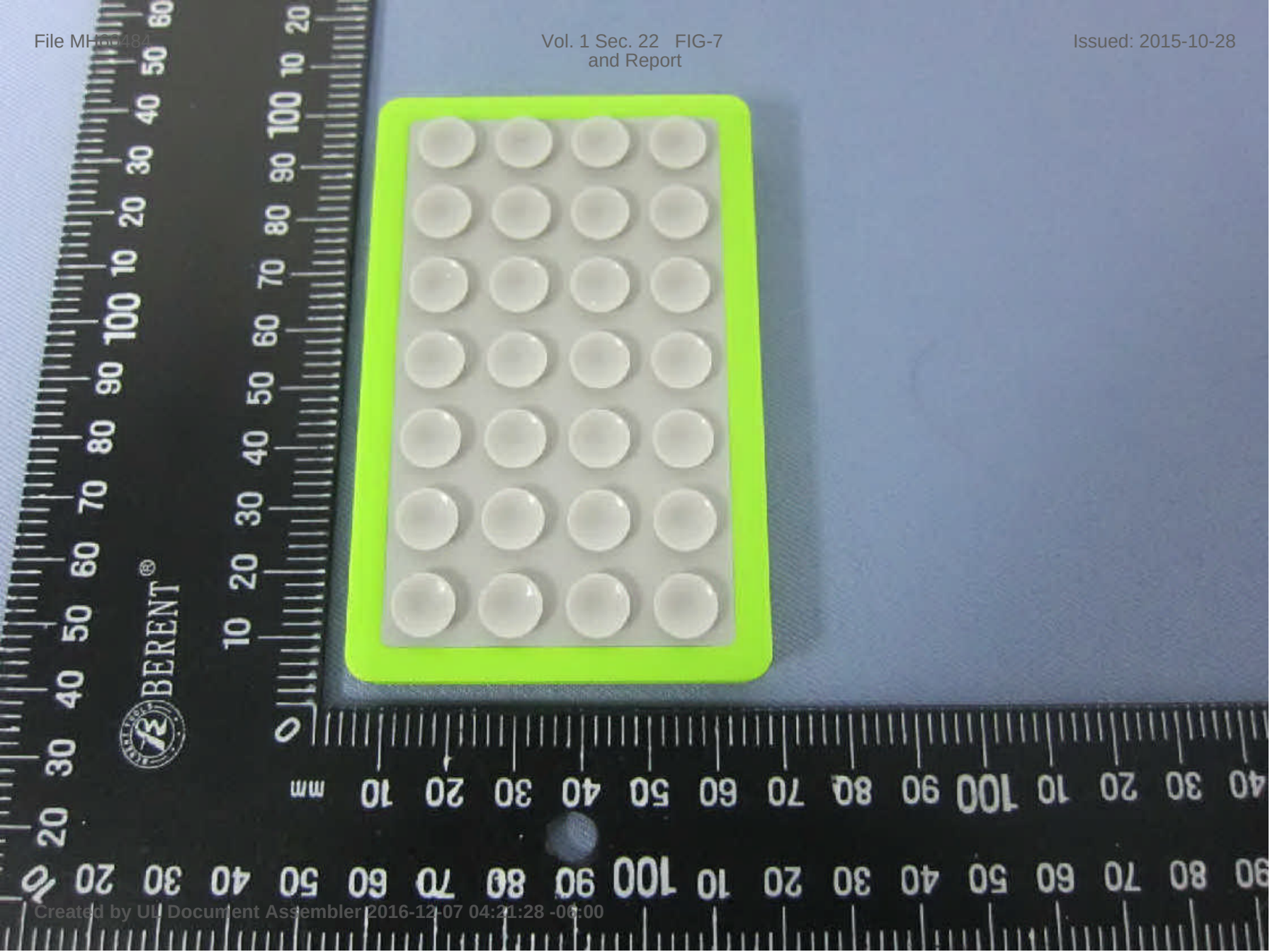


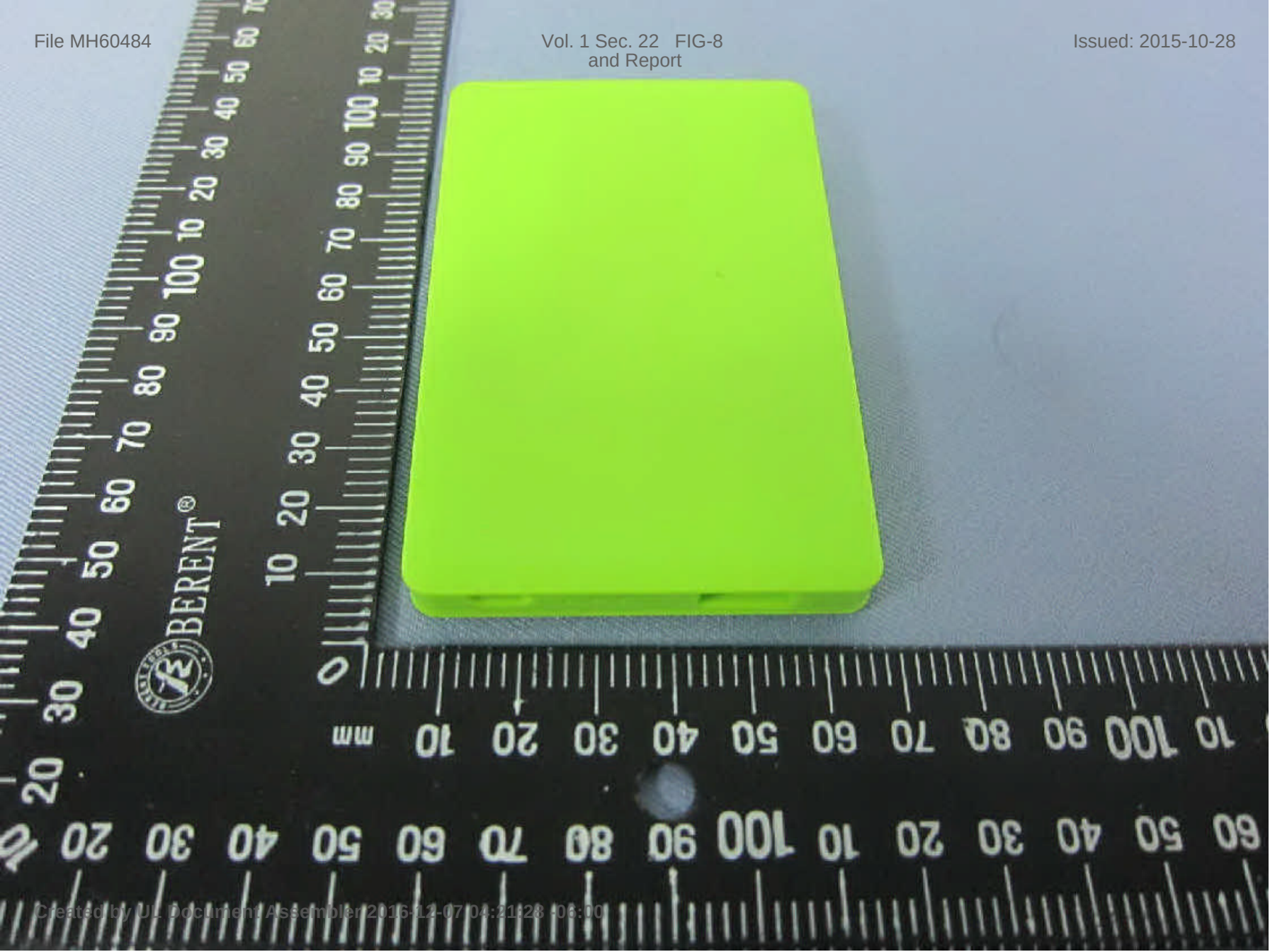


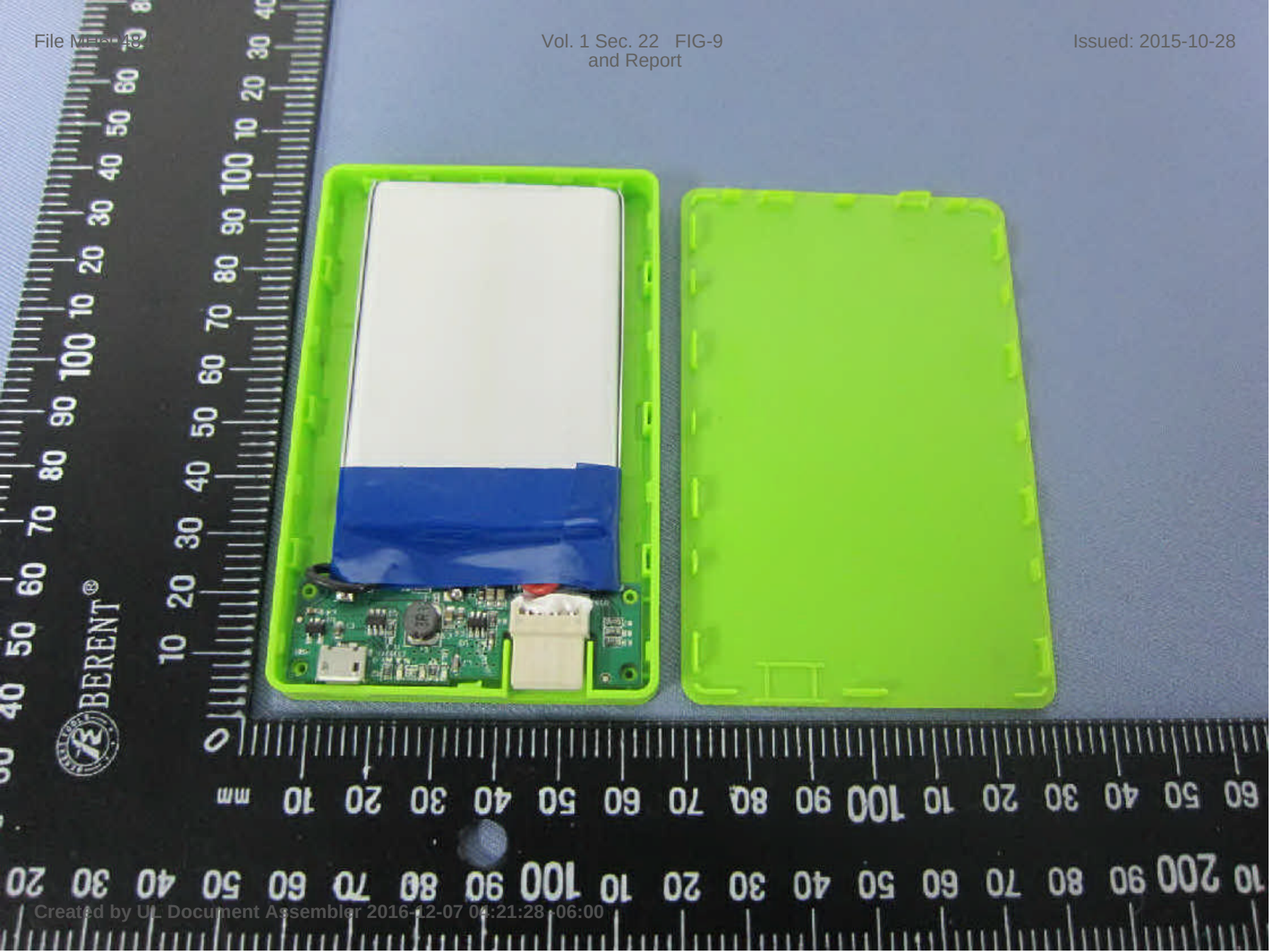


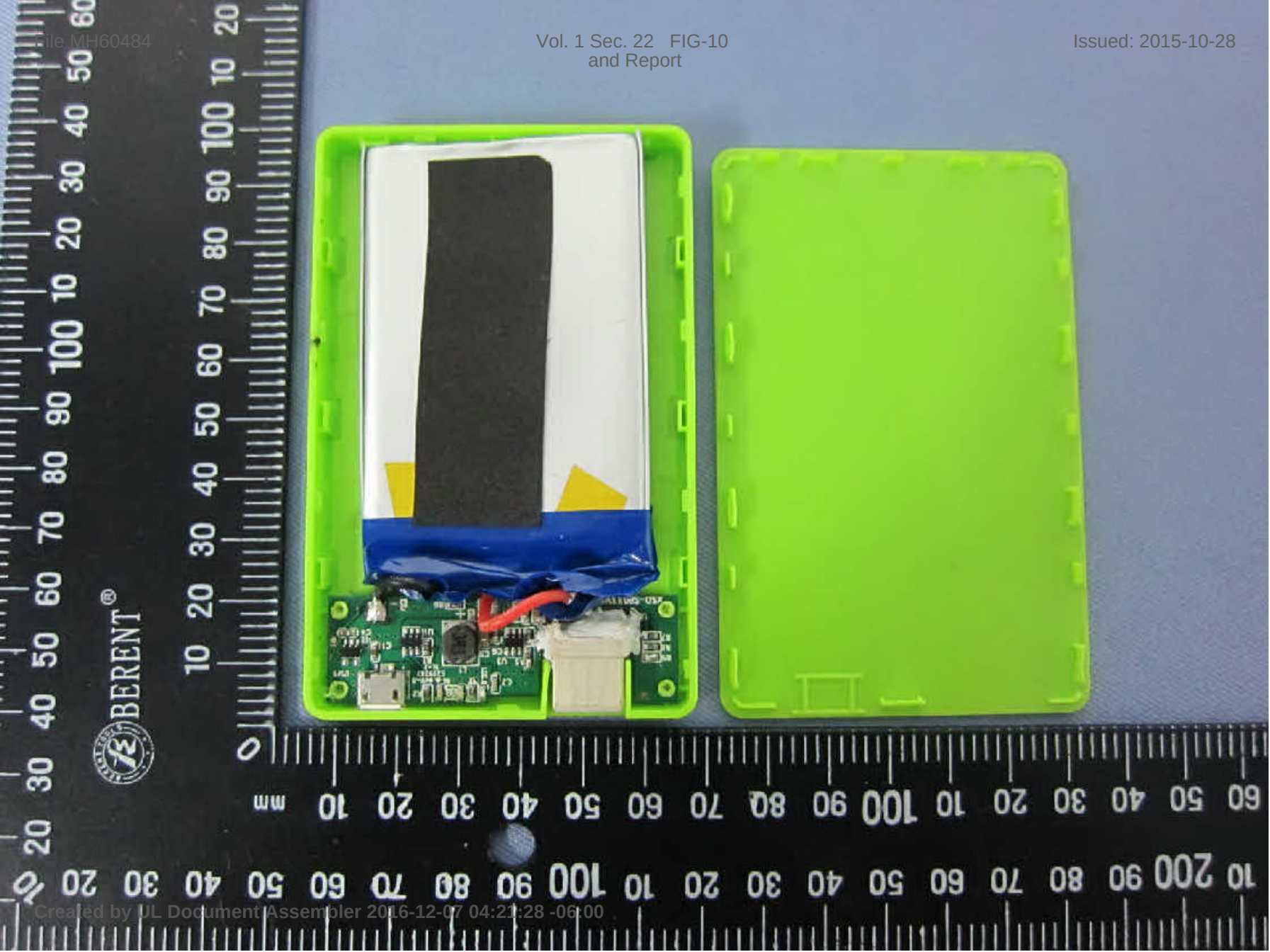

B- B+
20150525

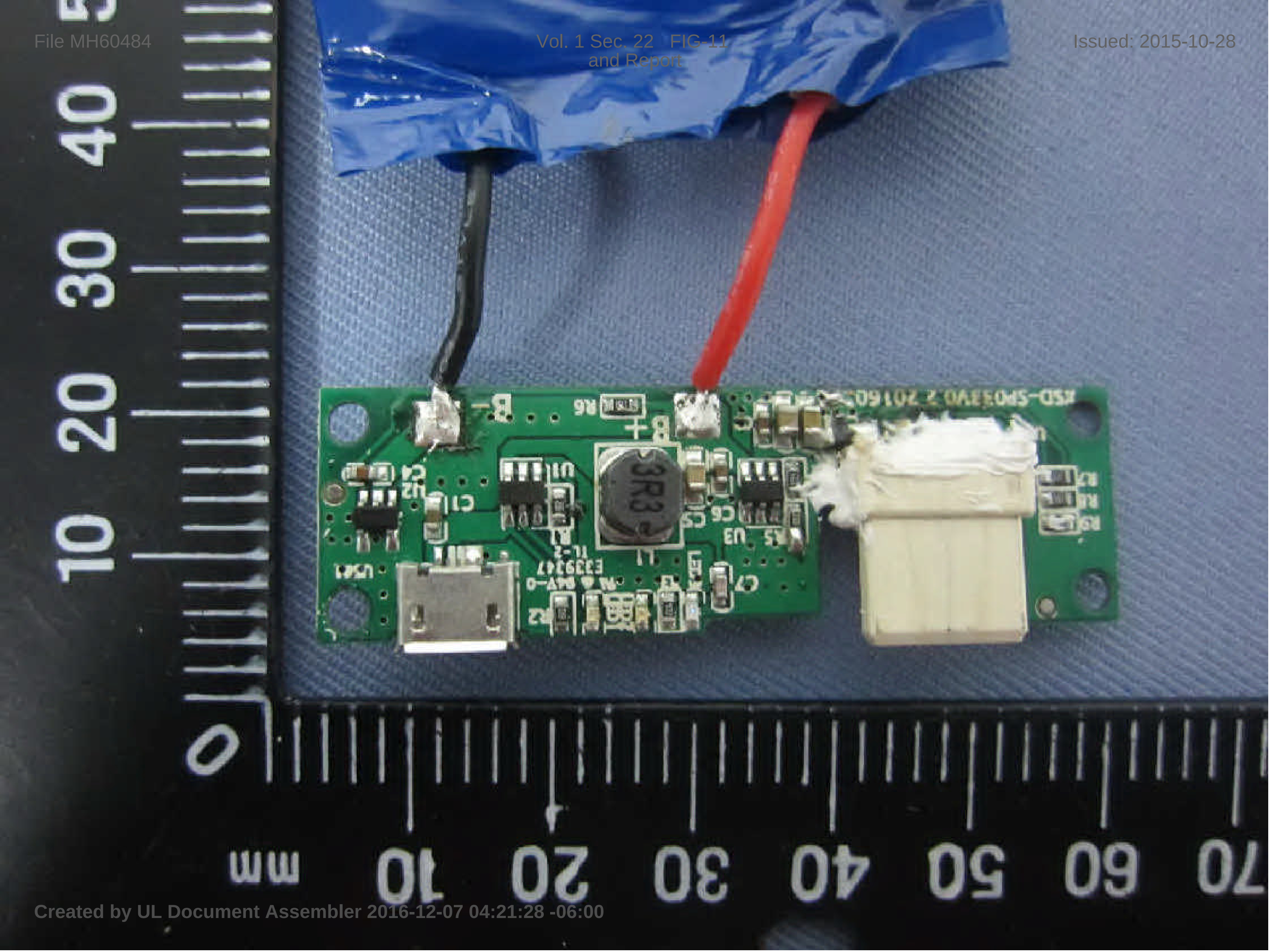




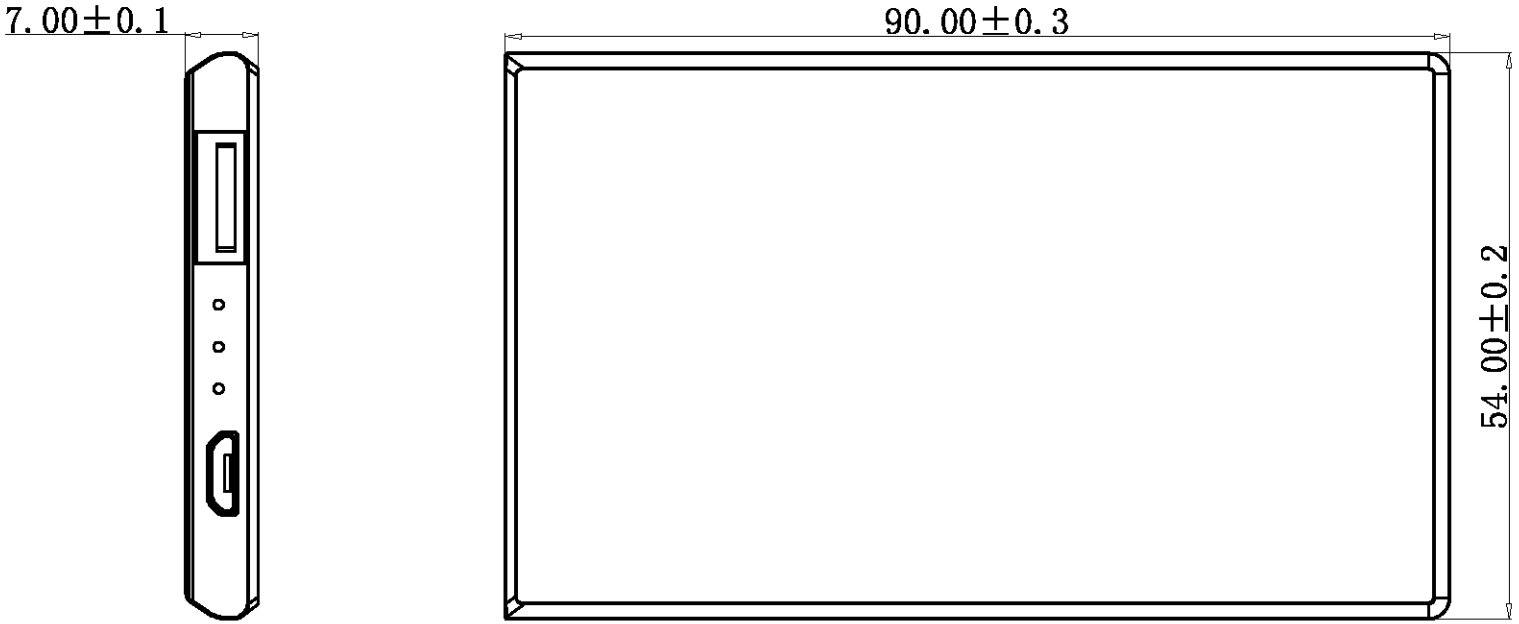




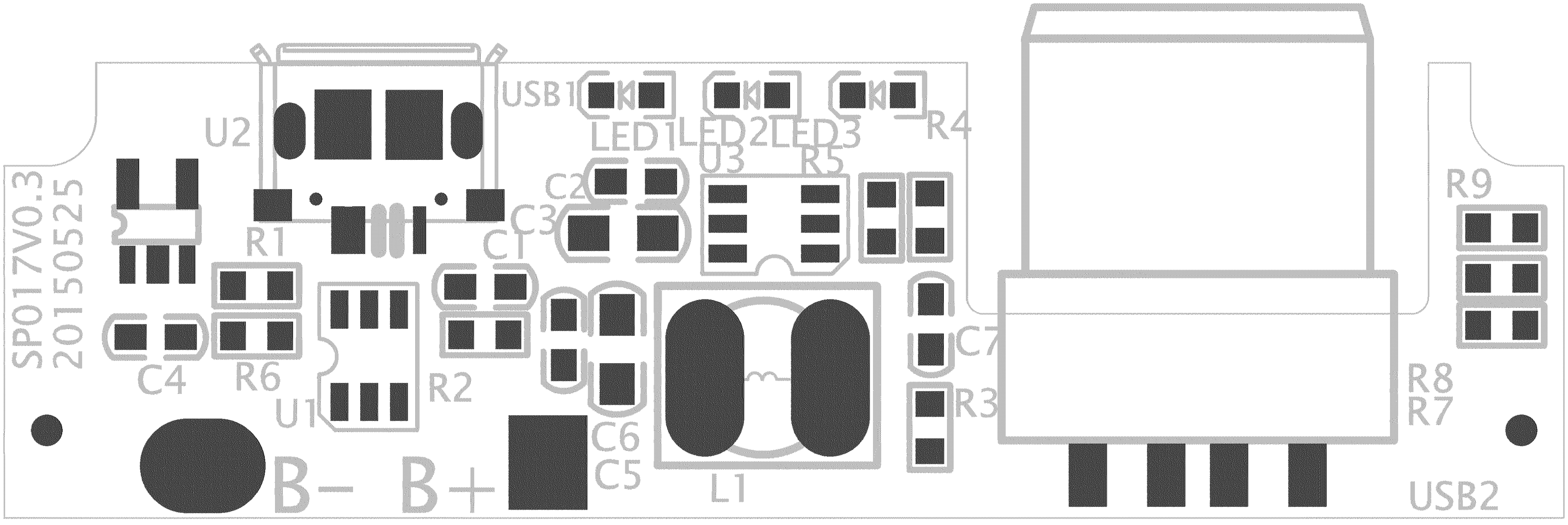




Unit: mm

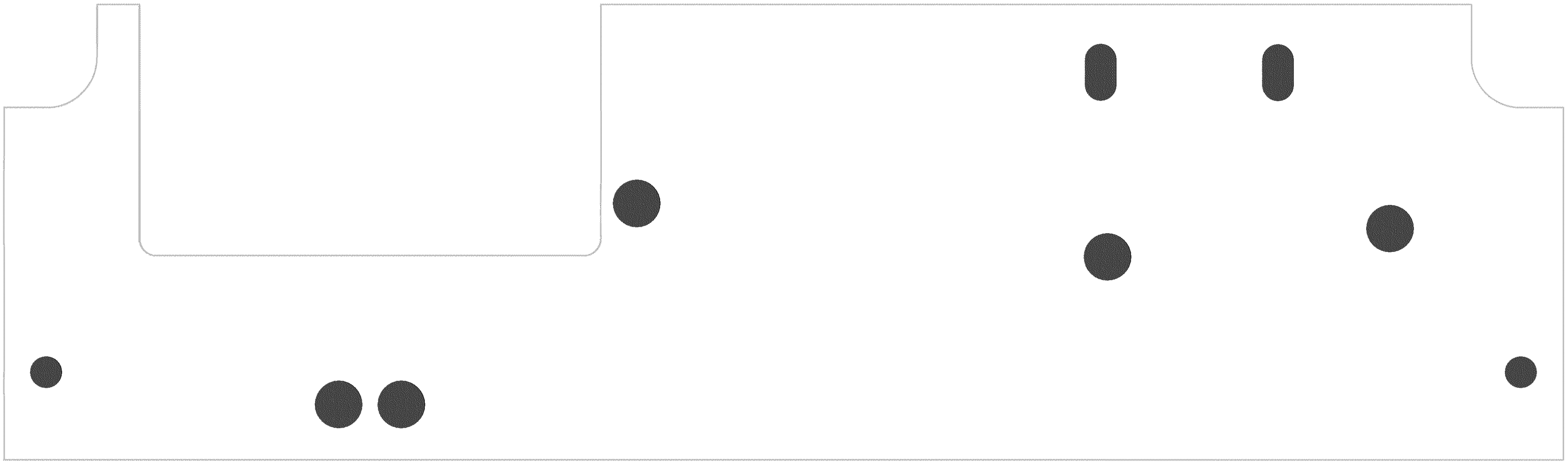


SP017-外部尺寸图



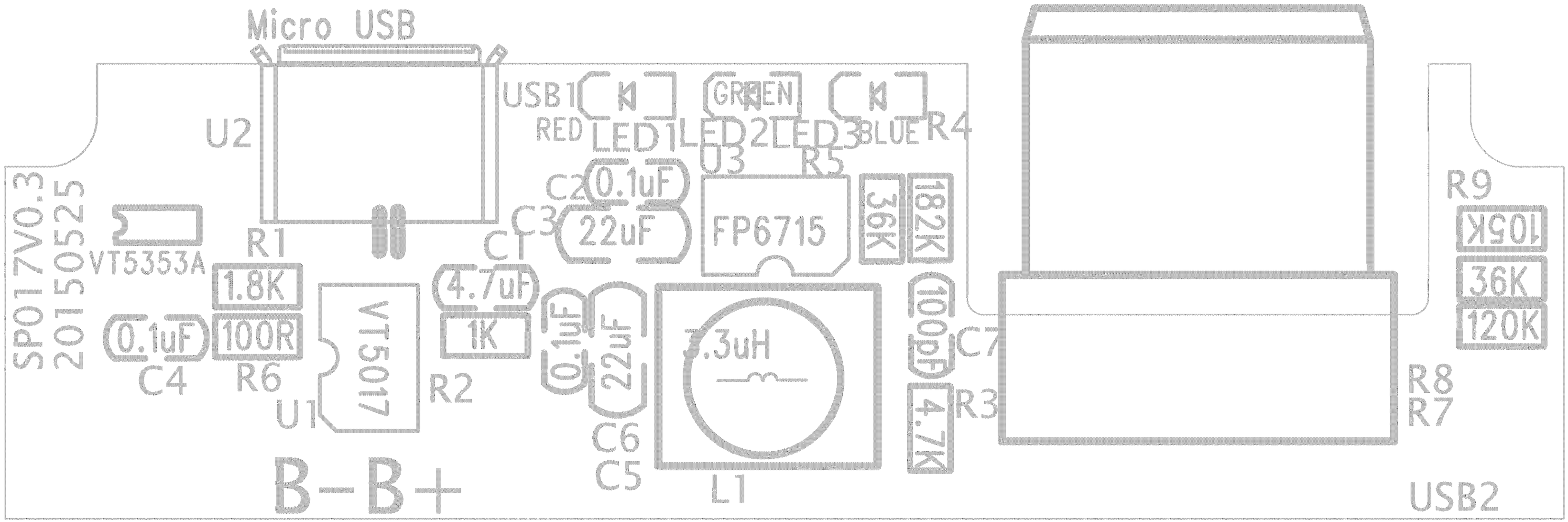
Shenzhen C-star Electronic Tech.CO.LTD

XSD-SP017V0.3 20150907



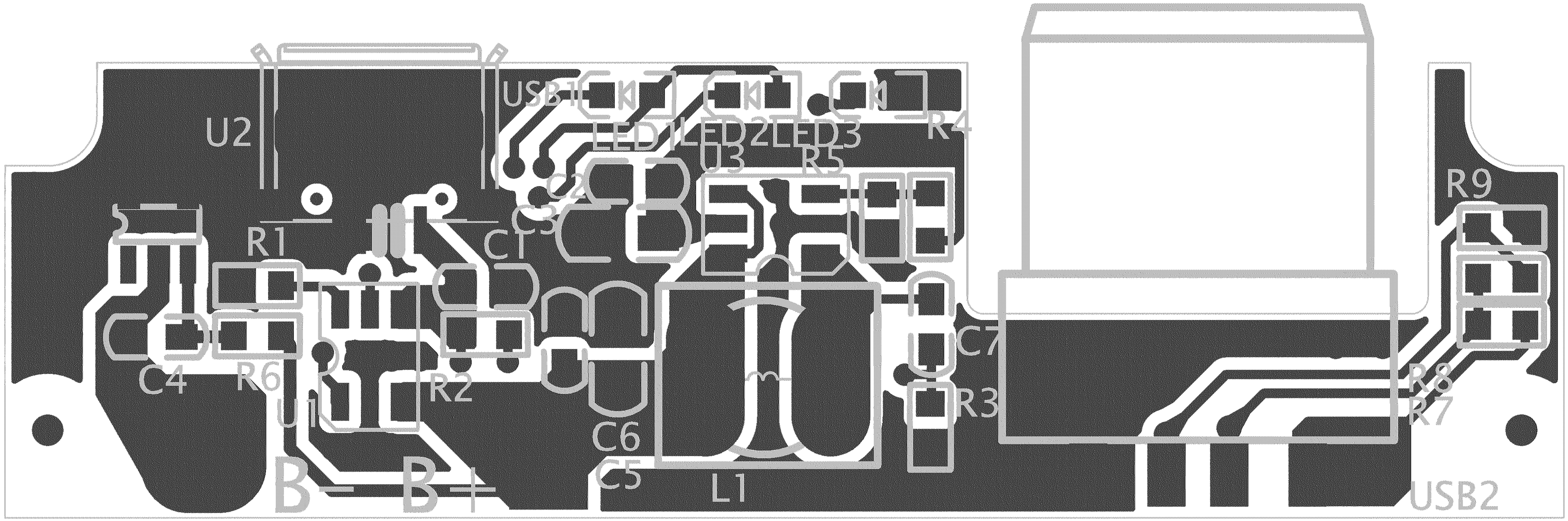
Shenzhen C-star Electronic Tech.CO.LTD

XSD-SP017V0.3 20150907



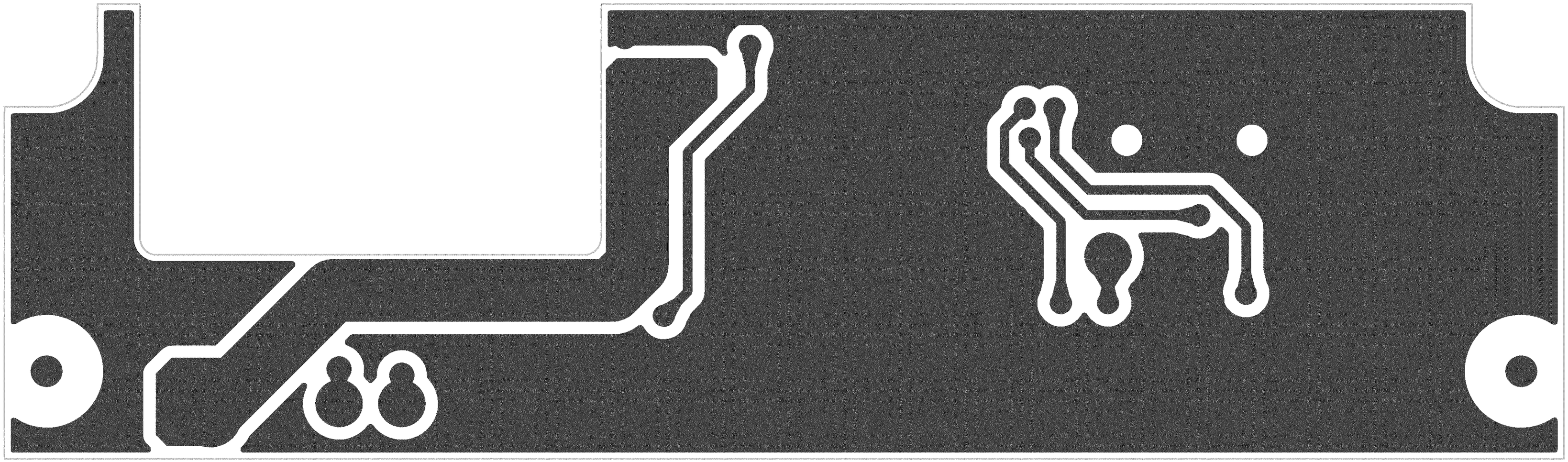
Shenzhen C-star Electronic Tech.CO.LTD

XSD-SP017V0.3 20150525



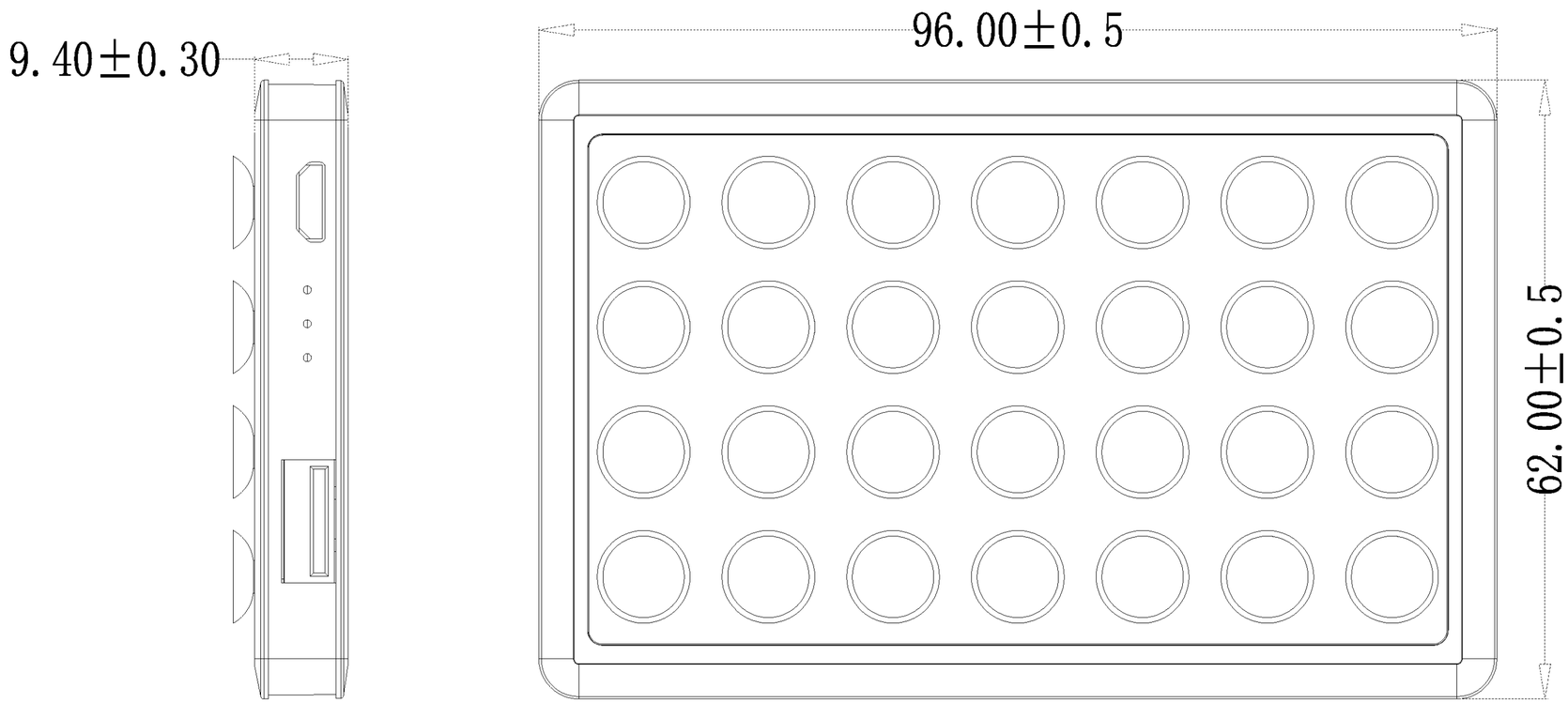
Shenzhen C-star Electronic Tech.CO.LTD

XSD-SP017V0.3 20150907



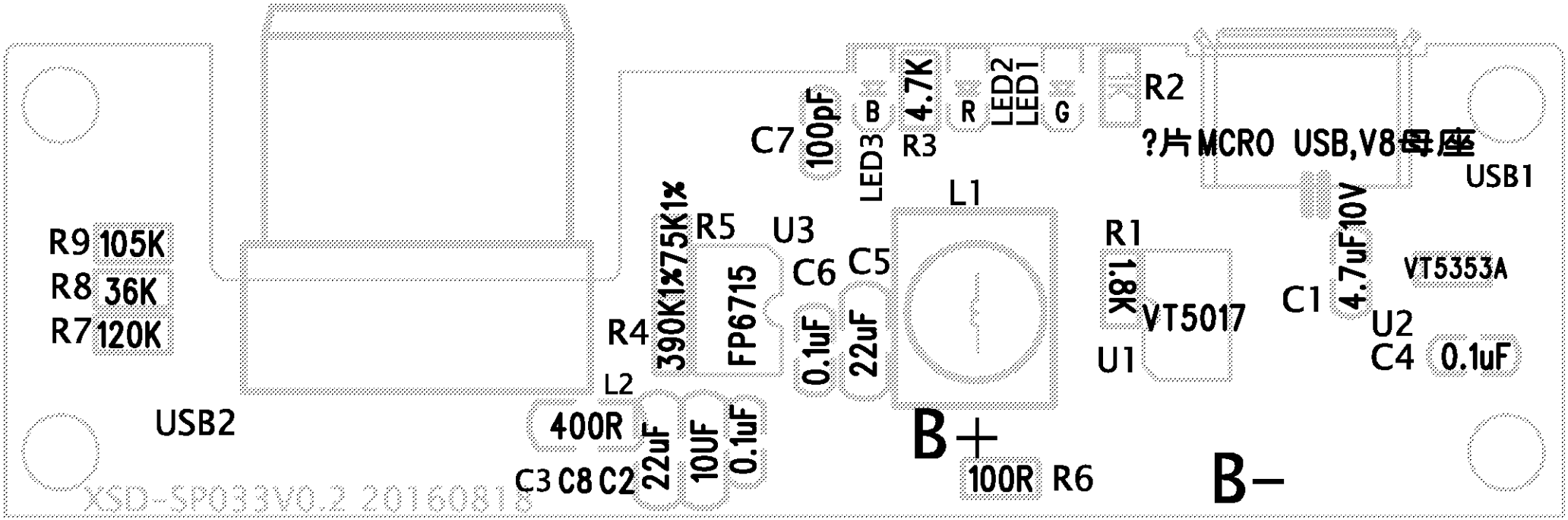
Shenzhen C-star Electronic Tech.CO.LTD

XSD-SP017V0.3 20150907



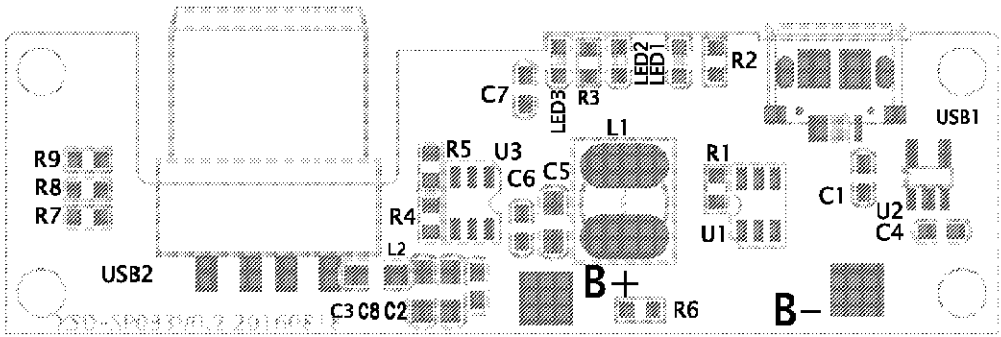
SP033-外部尺寸图

Unit: mm



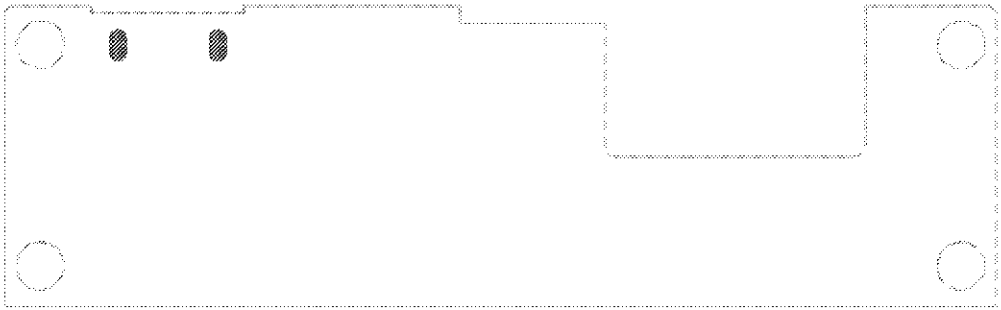
Shenzhen C-star Electronic Tech.CO.LTD

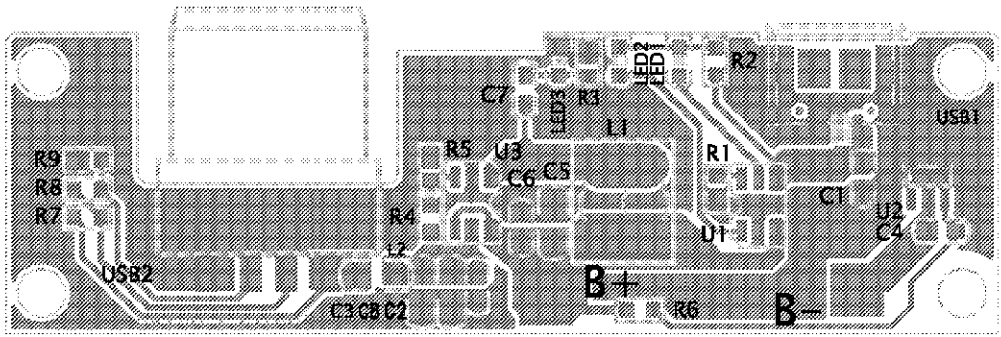
XSD-SP033V0.2 20160818



Shenzhen C-star Electronic Tech.CO.LTD

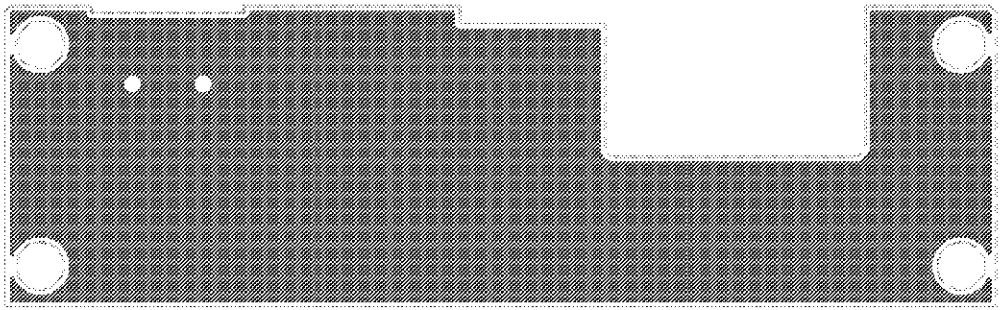
XSD-SP033V0.2 20160818


Shenzhen C-star Electronic Tech.CO.LTD
XSD-SP03V0.2 20160818



Shenzhen C-star Electronic Tech.CO.LTD

XSD-SP033V0.2 20160818



Shenzhen C-star Electronic Tech.CO.LTD

XSD-SP03V0.2 20160818

TEST RECORD NO. 1

SAMPLES:

A sample Portable Power Bank, Model SP017 as indicated below and constructed as described herein, was submitted by the manufacturer for examination and test.

Model No.	Nominal Voltage, V dc	Cap-acity, Ah	Maximum Charging Voltage, V dc	Maximum Charging Current, mA	Maximum discharge condition, mA	Dis-charge Cutoff Voltage, Vdc	Cell Config xS/yP	Cell Mfg.	Cell Model Number
SP017	5.0	2.0	5.3	600	1000	4.5	1S/1P	SHENZHEN DONGLIJUNENG TECHNOLOGY CO LTD (MH48250)	454770

GENERAL:

Test results relate only to the items tested.

All tests are conducted at Dongguan UTL Electronic Technology Co Ltd, located in 1F, HENGZHENG BLDG, NORTH RD OF STATION, NANCHENG DISTRICT, DONGGUAN, GUANGDONG, CHINA under the UL WTDP program.

Models SP017, IT857 are identical to each other except for model designation. The following tests were conducted on Model SP017 can represent aforementioned other models.

Test Conducted	UL 2054 Section Reference / **[x]** (UL/CSA 60950-1 Section Reference)	Compliant Results? **[Y] [N]**	Comments
Short Circuit Test - At Room Temperature (Excessive Discharging Rate for any Battery)	9.7 - 9.12 (4.3.8)	Y	--
Short Circuit Test - At 55 C	9.7 – 9.12	Y	--
Abnormal Charging Test: (Secondary) (Overcharging of a Rechargeable Battery)	10.10 – 10.13 (4.3.8)	Y	--
Abusive Overcharge Test	11	Y	--
Limited Power Source Test	13 (2.5)	Y	--

Table Cont'd

Test Conducted	UL 2054 Section Reference / **[x]** (UL/CSA 60950-1 Section Reference)	Compliant Results? **[Y] [N]**	Comments
Battery Pack Component Temperature Test Lithium Ion System (Heating Test) (Energy Hazard Measurements)	13A 4.5 (4.5) (2.1.1.5)	Y	--
Battery Pack Surface Temperature Test (Heating Test)	13B (4.5)	Y	--
250 N Steady Force Test (Steady Force Tests - 250 N)	19 (4.2.4)	Y	--
Mold Stress Relief Test (Stress Relief)	20 (4.2.7)	Y	--
Drop Impact Test (Drop)	21 (4.2.6)	Y	--

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

The test methods and results of the above tests also have been reviewed and found in accordance with the requirements (unless noted otherwise in the table above) in 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, Second Edition, issue dated October 14, 2014, and UL 60950-1, Second Edition, including revisions through revision date October 14, 2014.

Test Record Summary:

The results of this investigation, including construction review and testing, 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, Second Edition, issue dated October 14, 2014, and UL 60950-1, Second Edition, including revisions through revision date October 14, 2014, and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

TEST RECORD NO. 2

SAMPLES:

A sample of Portable Power Bank, Model(s): SP033 as indicated below and constructed as described herein, was submitted by the manufacturer for examination and test.

Model No.	Nominal Voltage, V dc	Capacity, Ah	Maximum Charging Voltage, V dc	Maximum Charging Current, mA	Maximum discharge condition, mA	Discharge Cutoff Voltage, Vdc	Cell Config xS/yP	Cell Mfg.	Cell Model Number
SP033	5.0	2.0	5.3	600	1000	4.5	1S/1P	SHENZHEN DONGLIJUNENG TECHNOLOGY CO LTD (MH48250)	454770

GENERAL:

Test results relate only to the items tested.

All Tests were conducted under WTDP program in Dongguan UTL Electronic Technology Co Ltd, Address: 1F, HENGZHENG BLDG, NORTH RD OF STATION, NANCHENG DISTRICT, DONGGUAN, GUANGDONG, CHINA, 523078.

MODEL DIFFERENCE: Models SP033 is identical to SP017 except for Enclosure, PCB Layout and model designation. Model 32068 is identical to SP033 except for model designation.

Due to similarity of Model SP033 to Listed Portable Power Bank Model SP017 (VOL 1, SEC 22) with the exception of PCB Layout, Enclosure and Model designation, only following test were necessarily conducted.

Test Conducted	UL 2054 Section Reference / [x] (UL/CSA 60950-1 Section Reference)	Compliant Results? [Y] [N]	Comments
Battery Pack Component Temperature Test, Battery Pack Surface Temperature Test Lithium Ion System (Heating Test) (Energy Hazard Measurements)	13a-13b 4.5 4.5 (2.1.1.5)	Y	-
250 N STEADY FORCE TEST: (UL 2054) STEADY FORCE TESTS 250 N (UL 60950-1/CSA C22.2 No. 60950-1-07/IEC 60950-1:2005 + A1:2009 + A2:2013)	19 (4.2.4)	Y	-

(Continuous)

Test Conducted	UL 2054 Section Reference / [x] (UL/CSA 60950-1 Section Reference)	Compliant Results? [Y] [N]	Comments
MOLD STRESS RELIEF TEST: (UL 2054) STRESS RELIEF (UL 60950-1/CSA C22.2 No. 60950-1-07/IEC 60950-1:2005 + A1:2009 + A2:2013)	20 (4.2.7)	Y	-
DROP IMPACT TEST: (UL 2054) DROP (UL 60950-1/CSA C22.2 No. 60950-1-07/IEC 60950-1:2005 + A1:2009 + A2:2013)	21 (4.2.6)	Y	-

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.

The test methods and results of the above tests have been reviewed and found in accordance with the requirements in the U.S. and Canadian (Bi-National) Standard for Safety of Information Technology Equipment – Safety - Part 1: General Requirements, CAN/CSA-C22.2 No. 60950-1-07, and UL 60950-1, Second Edition, including revisions through revision date October 14, 2014.

Test Record Summary:

The results of this investigation, including construction review and testing, 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, Second Edition, issue dated December, 2011, and UL 60950-1, Second Edition, including revisions through revision date December 19, 2011, and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report. Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. UL shall not otherwise be responsible to anyone for the use of or reliance upon the contents of this Report.

Report by:

Devin He (T)
Associate Project Engineer

Gary Wang
Associate Project Engineer

Reviewed by:

Alvin Peng
Senior Project Engineer

CONCLUSION

Samples of the product covered by this Report have been found to comply with the requirements covering the category and the product is found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the sample(s) investigated by UL and does not signify UL certification or that the product(s) described are covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the UL Listing on such products which comply with UL's Follow-Up Service Procedure and any other applicable requirements of UL LLC. The Listing Mark of UL LLC on the product, or the UL symbol on the product and the Listing 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 Listing and Follow-Up Service.

Report by:

NICKY X. WU
Engineer Project Associate

Reviewed by:

ALVIN PENG
Senior Project engineer