



Test Report

Report No : TST2019090401EN

Date: Sept.16,2019

Page 1 of 3

Applicant :

Address :

The following sample(s) was /were submitted and identified on behalf of the clients as :

Sample Name : Rechargeable lithium ion battery

Sample Model : YC 606090P

Sample Received Date : Sept.09,2019

Testing Period : Sept.09,2019 To Sept.16,2019

Test Requested : Accordance with Directive 2006/66/EC, to determine the Lead (Pb), Cadmium (Cd), Mercury (Hg) contents of the submitted sample(s).

Test Method : Please refer to next page(s).

Test Result : Please refer to next page(s).

Test conclusion : Test results of submitted sample(s) comply with the limit set by Directive 2006/66/EC and its amendment 2013/56/EU.

Signed for and on behalf of

Andy Zheng
Technical Director

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Test Result:

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Labelling Requirement#	Limit
Lead(Pb)	%(w/w)	IEC62321-5 : 2013, ICP-AES	N.D.	0.0010	>0.004	--
Cadmium(Cd)	%(w/w)	IEC62321-5 : 2013, ICP-AES	N.D.	0.0010	>0.002	0.002##
Mercury(Hg)	%(w/w)	IEC62321-4 : 2013, ICP-AES	N.D.	0.0010	>0.0005	0.0005

Note :

-MDL = Method Detection Limit

-N.D. = Not detected, less than MDL.

-# = According to the article 21.3, batteries, accumulators and button cells containing more than 0,0005 % mercury, more than 0,002 % cadmium or more than 0,004 % lead, shall be marked with the chemical symbol for the metal concerned: Hg, Cd or Pb.

-## = Not apply to portable batteries and accumulators intended for use in:

(a)emergency and alarm systems, including emergency lighting;

(b)medical equipment; or

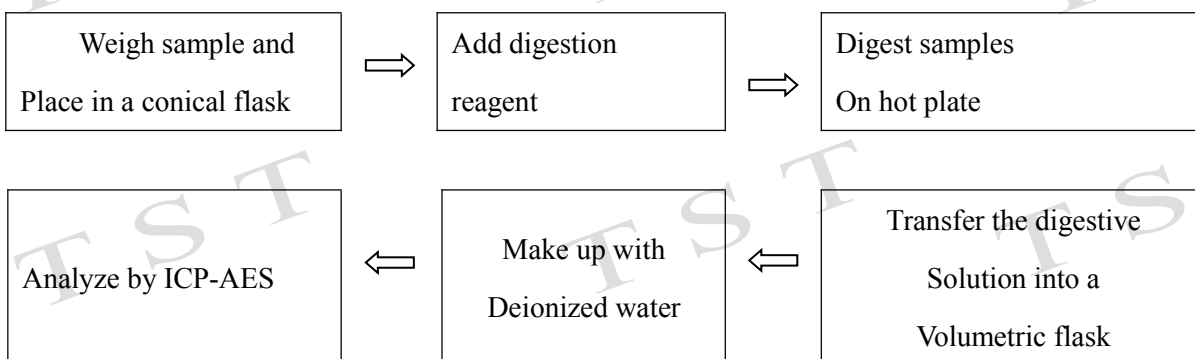
(c)cordless power tools.

-Results shown is/are of total weight of the Lithium Ion Battery sample.

-“--” = Not Regulated.

-According to the article 21.1, all batteries, accumulators and Lithium Ion Battery packs should be appropriately marked with the crossed-out wheeled bin symbol.

Test Process:



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Sample photo:



*** End of Report ***

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Test Report

Report No.: MTi19080601-2B1

Date of issue: Sept. 23, 2019

Sample Name: Rechargeable Polymer Li-ion Cell

Model: YC 606090P

Applicant:

Address:

Shenzhen Microtest Co., Ltd.
<http://www.mtitest.com>



TRF No. IEC62133_2A

This test report is valid for the tested samples only. It cannot be reproduced except in full without prior written consent of Shenzhen Microtest Co., Ltd.

Tel: (86-755) 88850135

Fax: (86-755) 88850136

Web: <http://www.mtitest.com>

E-mail: mti@51mti.com


Add: No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China.



TEST REPORT IEC 62133-2 Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems	
Tested by (printed name and signature).....:	Henry Chen <i>Henry chen</i>
Reviewed by (printed name and signature).....:	Roy Qin <i>Roy Qin</i>
Approved by (printed name and signature).....:	Tom Xue <i>Tom Xue</i>
Testing.....: Date of receipt of test item.....: Date (s) of performance of tests:	 2019.09.05 2019.09.05 to 2019.09.23
Testing laboratory.....: Address.....:	Shenzhen Mircrotest Co., Ltd. No.103&105, 8th Building, Hongwan Industrial Park, Gushu Community, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Applicant's name : Address :	
Test item description : Trade Mark.....: Model/Type reference.....: Ratings.....:	Rechargeable Polymer Li-ion Cell N/A YC 606090P 3.7V,4000mAh, 14.8W
Manufacturer.....: Address.....:	Heyuan Yunchuang New Energy Industry Co., Ltd. O building, Hudie Ling Industrial City-Reservoir immigrant Double Transfer Demonstration Base, Heyuan City, Guangdong Province
Test specification: Standard : Test procedure.....: : Non-standard test method.....: :	 IEC 62133-2:2017 Test report N/A
Test Report Form No.: Test Report Form(s) Originator....: Master TRF :	IEC62133_2A DEKRA Dated 2017-08-10
General disclaimer: The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the Testing Laboratory, responsible for this Test Report.	



List of Attachments (including a total number of pages in each attachment):																			
Attachment: Photos (1 pages)																			
Summary of testing:																			
Tests performed (name of test and test clause):	Testing location:																		
<table border="0"> <tr> <td>Clause(s)</td> <td>Test(s)</td> </tr> <tr> <td>7.1.1</td> <td>Charge (first procedure)</td> </tr> <tr> <td>7.1.2</td> <td>Charge (second procedure)</td> </tr> <tr> <td>7.2.1</td> <td>Continuous charging at constant voltage (cells)</td> </tr> <tr> <td>7.3.1</td> <td>External short-circuit (cell)</td> </tr> <tr> <td>7.3.3</td> <td>Free fall</td> </tr> <tr> <td>7.3.4</td> <td>Thermal abuse (cells)</td> </tr> <tr> <td>7.3.5</td> <td>Crush (cells)</td> </tr> <tr> <td>7.3.7</td> <td>Forced discharge (cells)</td> </tr> </table> <p>Operation condition: Refer to General product information for details.</p>	Clause(s)	Test(s)	7.1.1	Charge (first procedure)	7.1.2	Charge (second procedure)	7.2.1	Continuous charging at constant voltage (cells)	7.3.1	External short-circuit (cell)	7.3.3	Free fall	7.3.4	Thermal abuse (cells)	7.3.5	Crush (cells)	7.3.7	Forced discharge (cells)	<p>Shenzhen Microtest Co., Ltd. No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China.</p>
Clause(s)	Test(s)																		
7.1.1	Charge (first procedure)																		
7.1.2	Charge (second procedure)																		
7.2.1	Continuous charging at constant voltage (cells)																		
7.3.1	External short-circuit (cell)																		
7.3.3	Free fall																		
7.3.4	Thermal abuse (cells)																		
7.3.5	Crush (cells)																		
7.3.7	Forced discharge (cells)																		
Summary of compliance with National Differences (List of countries addressed): N/A																			

<p>Copy of marking plate: The artwork below may be only a draft.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>- Rechargeable Polymer Li-ion Cell Model: YC 606090P (ICP7/61/91) Nominal Voltage: 3.7V</p> <p>+ Capacity: 4000mAh, 14.8Wh</p> <p>Manufacturer: Heyuan Yunchuang New Energy Industry Co., Ltd.</p> <p>Date: 201909 Made in China</p> <p>CAUTION</p> <ul style="list-style-type: none"> -Do not disassemble or modify -Do not short-circuit -Do not dispose in fire -Do not expose to high temperature </div> <div style="text-align: right; margin-top: 20px;">  </div>
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IEC 62133-2

Clause	Requirement + Test	Result - Remark	Verdict
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Test item particulars.....:

Classification of installation and use.....: portable appliance
Supply Connection N/A
Recommend charging method declared by the manufacturer CC/CV
Discharge current 800mA
Specified final voltage.....: 3.0Vdc
Upper limit charging voltage per cell.....: 4.2Vdc
Maximum charging current 2000mA
Charging temperature upper limit 45°C
Charging temperature lower limit.....: 10°C
Polymer cell electrolyte type.....: gel polymer solid polymer N/A

Possible test case verdicts:

- test case does not apply to the test object..... : N/A
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement..... : F (Fail)

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
 "(See appended table)" refers to a table appended to the report.
Throughout this report a comma / point is used as the decimal separator.

General product information and other remarks:

The battery is constructed with one Polymer lithium-ion cell
 The main features of the cell are shown as below (clause 7.1.1):

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
YC606090P	4000mAh	3.7V	800mA	800mA	2000mA	4000mA	4.20V	3.0V

The main features of the cell are shown as below (clause 7.1.2):

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
YC 606090P	4.20V	200mA	10°C	45°C



IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
4	PARAMETER MEASUREMENT TOLERANCES		P
	Parameter measurement tolerances		P
5	GENERAL SAFETY CONSIDERATIONS		P
5.1	General		P
	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse		P
5.2	Insulation and wiring		P
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ	No metal surface exists.	N/A
	Insulation resistance (MΩ).....:		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		P
	Orientation of wiring maintains adequate clearance and creepage distances between conductors		P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		P
5.3	Venting		P
	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition		P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		N/A
5.4	Temperature, voltage and current management		N/A
	Batteries are designed such that abnormal temperature rise conditions are prevented		N/A
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		N/A
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified		N/A
5.5	Terminal contacts		N/A
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Complied.	N/A



IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	Complied.	N/A
	Terminal contacts are arranged to minimize the risk of short-circuit	Complied.	N/A
5.6	Assembly of cells into batteries		N/A
5.6.1	General		N/A
	Each battery have an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region		N/A
	This protection may be provided external to the battery such as within the charger or the end devices		N/A
	If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation		N/A
	If there is more than one battery housed in a single battery case, each battery have protective circuitry that can maintain the cells within their operating regions		N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		N/A
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		N/A
	Protective circuit components added as appropriate and consideration given to the end-device application		N/A
	The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance		N/A
5.6.2	Design recommendation		N/A
	For the battery consisting of a single cell or a single cellblock, it is recommended that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that the voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Table 2, by monitoring the voltage of every single cell or the single cellblocks		N/A



IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		N/A
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage not be counted as an overcharge protection		N/A
	For batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		N/A
	It is recommended that the cells and cell blocks not discharged beyond the cell manufacturer's specified final voltage		N/A
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system		N/A
5.6.3	Mechanical protection for cells and components of batteries		N/A
	Mechanical protection for cells, cell connections and control circuits within the battery provided to prevent damage as a result of intended use and reasonably foreseeable misuse		N/A
	The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product		N/A
	The battery case and compartments housing cells designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		N/A
	For batteries intended for building into a portable end product, testing with the battery installed within the end product considered when conducting mechanical tests		N/A
5.7	Quality plan		P
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery		P
5.8	Battery safety components		P
	According annex F	(See appended TABLE: Critical components information)	P



IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
6	TYPE TEST AND SAMPLE SIZE		P
	Tests are made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old	Complied. Table 2 for Lithium system.	P
	Coin cells with resistance $\leq 3 \Omega$ (measured according annex D) are tested according table 1		N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$	Tests are carried out at $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$.	P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and overdischarge protection		P
	When conducting the short-circuit test, consideration given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test		P
7	SPECIFIC REQUIREMENTS AND TESTS		P
7.1	Charging procedure for test purposes	Complied.	P
7.1.1	First procedure		P
	This charging procedure applies to subclauses other than those specified in 7.1.2		P
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$, using the method declared by the manufacturer		P
	Prior to charging, the battery have been discharged at $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$ at a constant current of 0,2 It A down to a specified final voltage		P
7.1.2	Second procedure		P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P
	After stabilization for 1 h and 4 h, respectively, at ambient temperature of highest test temperature and lowest test temperature, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant voltage charging method		
7.2	Intended use		P
7.2.1	Continuous charging at constant voltage (cells)		P
	Fully charged cells are subjected for 7 days to a charge using the charging method for current and standard voltage specified by the cell manufacturer		P
	Results: No fire. No explosion. No leakage :	(See appended table 7.2.1)	P
7.2.2	Case stress at high ambient temperature (battery)		N/A
	Oven temperature ($^\circ\text{C}$)..... :		—



IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells		N/A
7.3	Reasonably foreseeable misuse		P
7.3.1	External short-circuit (cell)		P
	The cells were tested until one of the following occurred:		P
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		P
	Results: No fire. No explosion	(See appended table 7.3.1)	P
7.3.2	External short-circuit (battery)		N/A
	The batteries were tested until one of the following occurred:		N/A
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		N/A
	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition		N/A
	A single fault in the discharge protection circuit conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test		N/A
	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor		N/A
	Results: No fire. No explosion		N/A
7.3.3	Free fall		P
	Results: No fire. No explosion	No fire. No explosion.	P
7.3.4	Thermal abuse (cells)		P
	Oven temperature (°C)..... :	130°C	—
	Results: No fire. No explosion		P
7.3.5	Crush (cells)		P
	The crushing force was released upon:		P
	- The maximum force of 13 kN ± 0,78 kN has been applied; or	13KN	P
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	Results: No fire. No explosion	(See appended table 7.3.5)	P
7.3.6	Over-charging of battery		N/A
	The supply voltage which is:		N/A



IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or		N/A
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		N/A
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached		N/A
	Test was continued until the temperature of the outer casing:		N/A
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		N/A
	- Returned to ambient		N/A
	Results: No fire. No explosion		N/A
7.3.7	Forced discharge (cells)		P
	If the discharge voltage reaches the negative value of upper limit charging voltage within the testing duration, the voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration		P
	If the discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration, the test is terminated at the end of the testing duration		N/A
	Results: No fire. No explosion	(See appended table 7.3.7)	P
7.3.8	Mechanical tests (batteries)		N/A
7.3.8.1	Vibration		N/A
	Results: No fire, no explosion, no rupture, no leakage or venting.		N/A
7.3.8.2	Mechanical shock		N/A
	Results: No leakage, no venting, no rupture, no explosion and no fire		P
7.3.9	Design evaluation – Forced internal short-circuit (cells)		N/A
	The cells complied with national requirement for..... :		—
	The pressing was stopped upon:		N/A
	- A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached		N/A
	Results: No fire		N/A



IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
8	INFORMATION FOR SAFETY		P
8.1	General		P
	Manufacturers of secondary cells ensure that information is provided about current, voltage and temperature limits of their products	Information for safety mentioned in manufacturer's specifications.	P
	Manufacturers of batteries ensure that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards	Information for safety mentioned in manufacturer's specifications.	P
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A
	As appropriate, any information relating to hazard avoidance resulting from a system analysis provided to the end user		N/A
	Do not allow children to replace batteries without adult supervision		N/A
8.2	Small cell and battery safety information		N/A
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		N/A
	- Keep small cells and batteries which are considered swallowable out of the reach of children		N/A
	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion		N/A
	- In case of ingestion of a cell or battery, seek medical assistance promptly		N/A
9	MARKING		P
9.1	Cell marking		N/A
	Cells marked as specified in IEC 61960, except coin cells	The battery is marked in accordance with IEC 61960, also see copy of marking plate	N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		N/A
9.2	Battery marking		N/A
	Batteries marked as specified in IEC 61960, except for coin batteries		N/A



IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement		N/A
	Terminals have clear polarity marking on the external surface of the battery		N/A
	Batteries with keyed external connectors designed for connection to specific end products need not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N/A
9.3	Caution for ingestion of small cells and batteries		N/A
	Coin cells and batteries identified as small batteries according to 8.2 include a caution statement regarding the hazards of ingestion in accordance with 8.2		N/A
	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package		N/A
9.4	Other information		P
	Storage and disposal instructions	Information for storage instructions mentioned in manufacturer's specifications.	P
	Recommended charging instructions	Information for recommended charging instructions mentioned in manufacturer's specifications.	P
10	PACKAGING AND TRANSPORT		P
	Packaging for coin cells not small enough to fit within the limits of the ingestion gauge of Figure 3		P
	The materials and packaging design are chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		N/A
ANNEX A	CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE		P
A.1	General		P
A.2	Safety of lithium ion secondary battery		P
A.3	Consideration on charging voltage		P
A.3.1	General		P
A.3.2	Upper limit charging voltage		P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		P



IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied		N/A
A.4	Consideration of temperature and charging current		P
A.4.1	General		P
A.4.2	Recommended temperature range		P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied		P
A.4.3	High temperature range		P
A.4.3.1	General		P
A.4.3.2	Explanation of safety viewpoint		N/A
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		N/A
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range		P
A.4.4	Low temperature range		P
A.4.4.1	General		P
A.4.4.2	Explanation of safety viewpoint		N/A
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		P
A.4.5	Scope of the application of charging current		p
A.4.6	Consideration of discharge		p
A.4.6.1	General		p
A.4.6.2	Final discharge voltage and explanation of safety viewpoint		p
A.4.6.3	Discharge current and temperature range		p
A.4.6.4	Scope of application of the discharging current		p
A.5	Sample preparation		N/A
A.5.1	General		N/A
A.5.2	Insertion procedure for nickel particle to generate internal short		N/A
A.5.3	Disassembly of charged cell		N/A
A.5.4	Shape of nickel particle		N/A
A.5.5	Insertion of nickel particle in cylindrical cell		N/A
A.5.5.1	Insertion of nickel particle in winding core		N/A
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		N/A
A.5.6	Insertion of nickel particle in prismatic cell		N/A



IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.6	Experimental procedure of the forced internal short-circuit test		N/A
A.6.1	Material and tools for preparation of nickel particle		N/A
A.6.2	Example of a nickel particle preparation procedure		N/A
A.6.3	Positioning (or placement) of a nickel particle		N/A
A.6.4	Damaged separator precaution		N/A
A.6.5	Caution for rewinding separator and electrode		N/A
A.6.6	Insulation film for preventing short-circuit		N/A
A.6.7	Caution when disassembling a cell		N/A
A.6.8	Protective equipment for safety		N/A
A.6.9	Caution in the case of fire during disassembling		N/A
A.6.10	Caution for the disassembling process and pressing the electrode core		N/A
A.6.11	Recommended specifications for the pressing device		N/A

ANNEX B	RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS	N/A
----------------	--	------------

ANNEX C	RECOMMENDATIONS TO THE END-USERS	N/A
----------------	---	------------

ANNEX D	MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS	N/A
D.1	General	N/A
D.2	Method	N/A
	A sample size of three coin cells is required for this measurement	N/A
	Coin cells with an internal resistance of less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1	N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing	N/A

ANNEX E	PACKAGING AND TRANSPORT	N/A
----------------	--------------------------------	------------

ANNEX F	COMPONENT STANDARDS REFERENCES	N/A
----------------	---------------------------------------	------------

TABLE: Critical components information					P
Object / part No.	Manufacturer / trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
1.Cell	Heyuan Yunchuang New Energy Industry Co., Ltd.	YC 606090P	3.7Vdc, 4000mAh,	IEC 62133-2:2017	Tested with appliance
-Separator	--	--	PE shutdown temperature: 130°C	--	Tested with appliance
-Electrolyte	--	--	LiFP6 dissolved in organic solvent (EC+ DMC)	--	Tested with appliance
-Positive electrode	--	--	NMC, LMO	--	Tested with appliance
-Negative electrode	--	--	Graphite, CMC, SBR, Distilled Water, Conductive Additive,	--	Tested with appliance
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

7.2.1	TABLE: Continuous charging at constant voltage (cells)				P
Sample no.	Recommended charging voltage V _c (Vdc)	Recommended charging current I _{rec} (mA)	OCV before test (Vdc)	Results	
C1	4.20	800	4.19	NF, NE, NL	
C2	4.20	800	4.19	NF, NE, NL	
C3	4.20	800	4.18	NF, NE, NL	
C4	4.20	800	4.19	NF, NE, NL	
C5	4.20	800	4.19	NF, NE, NL	
Supplementary information: NF: No fire, NE: No explosion, NL: No leakage, OCV: open-circuit voltage					

7.3.1	TABLE: External short-circuit (cell)					P
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Results	
Samples charged at charging temperature upper limit						
C6	54.7	4.16	82.3	48.0	NF, NE	
C7	54.7	4.16	81.4	53.7	NF, NE	
C8	54.7	4.16	85.2	55.0	NF, NE	
C9	54.7	4.16	87.6	45.9	NF, NE	
C10	54.7	4.15	83.8	52.5	NF, NE	
Samples charged at charging temperature lower limit						
C11	54.5	4.14	84.2	48.7	NF, NE	
C12	54.5	4.13	85.7	52.3	NF, NE	
C13	54.5	4.14	86.3	45.5	NF, NE	
C14	54.5	4.14	84.1	47.2	NF, NE	
C15	54.5	4.13	85.3	49.6	NF, NE	
Supplementary information: NF: No fire, NE: No explosion						

7.3.2	TABLE: External short-circuit (battery)					N/A
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Component single fault condition	Results
Supplementary information: NF: No fire, NE: No explosion						

7.3.5	TABLE: Crush (cells)				P
Sample no.	OCV before test (Vdc)	OCV at removal of crushing force (Vdc)	Maximum force applied to the cell during crush (kN)	Results	
Samples charged at charging temperature upper limit					
C29	4.16	4.16	13	NF, NE	
C30	4.16	4.16	13	NF, NE	
C31	4.15	4.15	13	NF, NE	
C32	4.15	4.15	13	NF, NE	
C33	4.16	4.16	13	NF, NE	
Samples charged at charging temperature lower limit					
C34	4.13	4.13	13	NF, NE	
C35	4.14	4.14	13	NF, NE	
C36	4.14	4.14	13	NF, NE	
C37	4.14	4.14	13	NF, NE	
C38	4.13	4.13	13	NF, NE	
Supplementary information: NF: No fire, NE: No explosion					

7.3.6	TABLE: Over-charging of battery				N/A
Constant charging current (A).....:					—
Supply voltage (Vdc).....:					—
Sample no.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results	
Supplementary information: NF: No fire, NE: No explosion					

7.3.7	TABLE: Forced discharge (cells)				P
Sample no.	OCV before application of reverse charge (Vdc)	Measured reverse charge I_t (mA)	Lower limit discharge voltage (Vdc)	Results	
C39	3.33	4000	-4.20	NF, NE	
C40	3.33	4000	-4.20	NF, NE	
C41	3.33	4000	-4.20	NF, NE	
C42	3.34	4000	-4.20	NF, NE	
C43	3.33	4000	-4.20	NF, NE	
Supplementary information: NF: No fire, NE: No explosion					

7.3.8.1	TABLE: Vibration					N/A
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
Supplementary information: NF: No fire, NE: No explosion, NR: No rupture, NL: No leakage, NV: No venting						

7.3.8.2					TABLE: Mechanical shock	N/A
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	

Supplementary information:
 NF: No fire, NE: No explosion, NR: No rupture, NL: No leakage, NV: No venting

7.3.9					TABLE: Forced internal short circuit (cells)	N/A
Sample no.	Chamber ambient T (°C)	OCV before test (Vdc)	Particle location ¹⁾	Maximum applied pressure (N)	Results	
Samples charged at charging temperature upper limit						
Samples charged at charging temperature lower limit						

Supplementary information:
¹⁾ Identify one of the following:
 1: Nickel particle inserted between positive and negative (active material) coated area.
 2: Nickel particle inserted between positive aluminium foil and negative active material coated area.
 Remark: There is no positive aluminium foil face to negative active material coated area in this sample.
 NF: No fire

D.2				TABLE: Internal AC resistance for coin cells	N/A
Sample no.	Ambient T (°C)	Store time (h)	Resistance Rac (Ω)	Results ¹⁾	

Supplementary information:
¹⁾ Coin cells with internal resistance less than or equal to 3 Ω, see test result on corresponding tables

Attachment: Photos of the product

Photo 1
Description: Overview

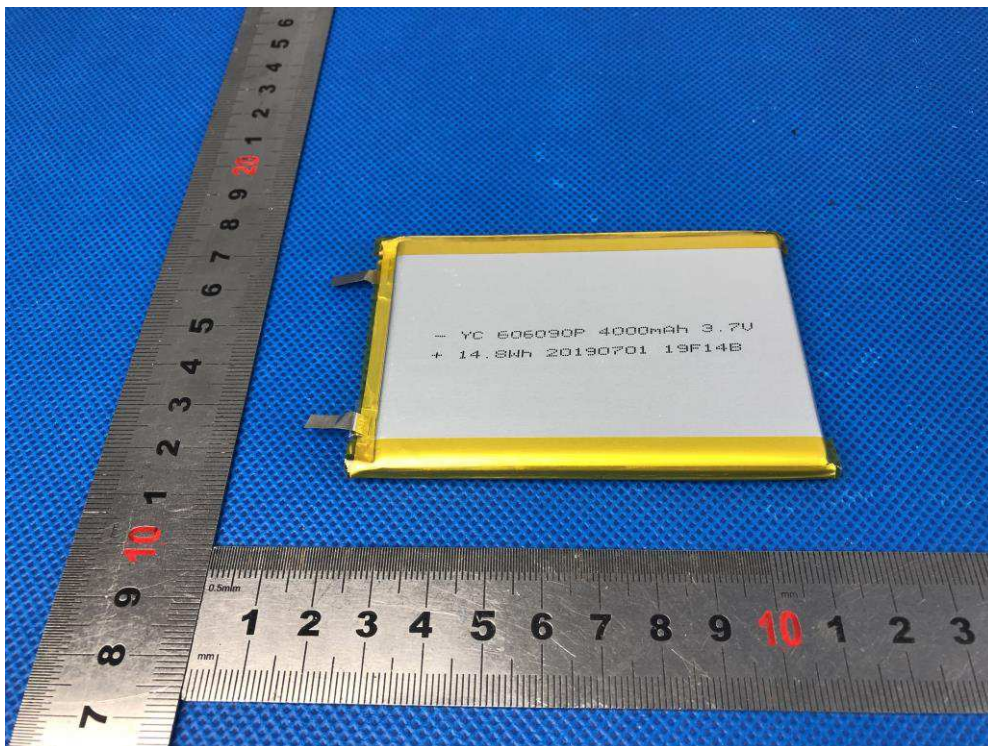
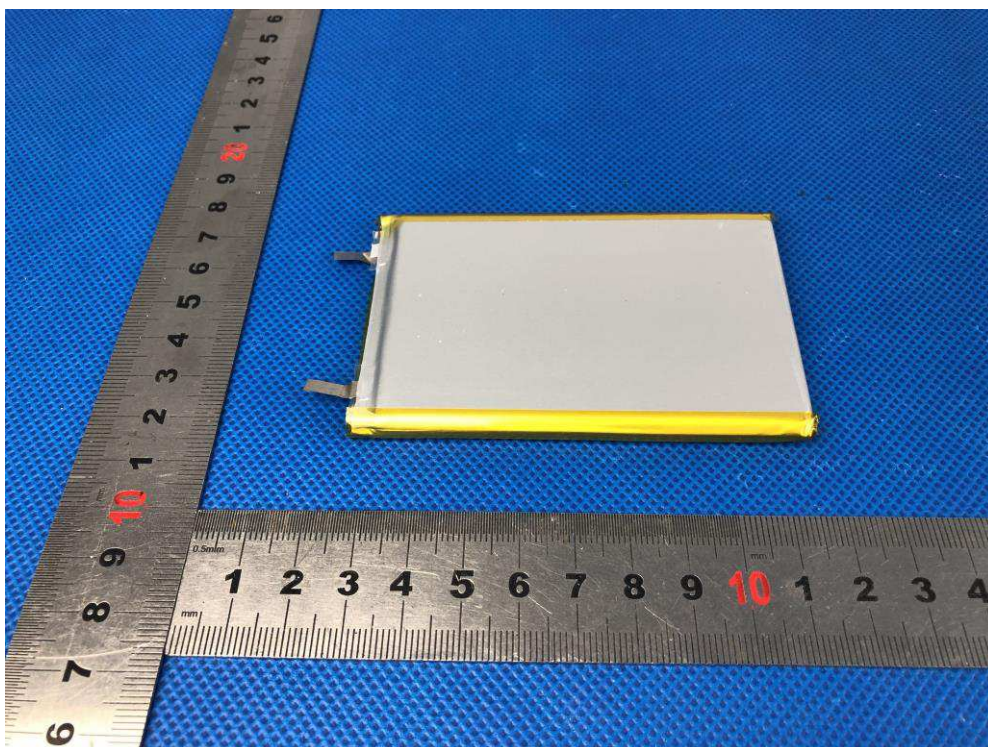


Photo 2
Description: Overview



--The End of Report--



**CTS (NINGBO) TESTING SERVICE TECHNOLOGY
INTERNATIONAL**

OPERATE ACCORDING TO ISO/IEC 17025

EMC TEST REPORT

TEST REPORT NUMBER : CNB3180705-00518-E-D



CTS (Ningbo) Testing Service Technology Co., Ltd.

Fl.1 & 8 West, Bldg. B, No. 66, Qingyi Rd., Hi-Tech Zone, Ningbo, Zhejiang, China



TEST REPORT EN 61000-6-3:2007+A1:2011+AC:2012 Electromagnetic compatibility (EMC) —Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments EN 61000-6-1:2007 Electromagnetic compatibility (EMC) —Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments	
Report Reference No.	CNB3180705-00518-E-D
Date of issue	26 July 2018
Testing Laboratory Name	CTS (Ningbo) Testing Service Technology Co., Ltd.
Address	GZ test site: A101, No.65, Zhuji Road, Tianhe District, Guangzhou, Guangdong, China.
Testing location/ procedure.....	Full application of Harmonised standards <input checked="" type="checkbox"/> Partial application of Harmonised standards <input type="checkbox"/> Other standard testing method <input type="checkbox"/>
Applicant's name	
Address	
Test specification:	
Standard.....	EN 61000-6-3:2007+A1:2011+AC:2012, EN 61000-6-1:2007
Test Report Form No.	CTSEMC-1.0
TRF Originator	CTS (Ningbo) Testing Service Technology Co., Ltd.
Master TRF	Dated 2009-01
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Test item description	Power bank
Trade Mark	/
Manufacturer	
Model/Type reference	MO9075
Ratings	DC 5V
Result	PASSED

Compiled by:

Kate

Kate zhang / File administrators

Supervised by:

Duke

Duke yang / Technique principal

Approved by:

Vincent Yao

Vincent yao / Manager

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EMC -- TEST REPORT

Test Report No. : CNB3180705-00518-E-D	<u>26 July 2018</u> Date of issue
---	--------------------------------------

Type / Model.....	MO9075
EUT.....	Power bank
Applicant.....	
Address.....	
Telephone.....	/
Fax.....	/
Contact.....	/
Manufacturer.....	
Address.....	
Telephone.....	/
Fax.....	/
Contact.....	Nina
Factory.....	
Address.....	
Telephone.....	
Fax.....	
Contact.....	

Special description:
 This is an additional test report which is based on the original report **CNB3180704-00515-E**.
 There are no any difference among the models except for the applicant. After review, no additional test should be carried out.

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

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1 TEST STANDARDS

The tests were performed according to following standards:

EN 61000-6-3:2007+A1:2011+AC:2012 Electromagnetic compatibility (EMC) —Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments

EN 61000-6-1:2007 Electromagnetic compatibility (EMC) —Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments

2 SUMMARY

2.1 GENERAL REMARKS

Date of receipt of test sample	06 July 2018
Testing commenced on	06~20 July 2018
Testing concluded on	26 July 2018

2.2 FINAL ASSESSMENT

The EMC requirements pertaining to the technical standards and tested operation modes are

- fulfilled.
- **not** fulfilled.

The equipment under test

- fulfils the EMC requirements cited on page 1.
- **does not** fulfil the EMC requirements cited on page 1.



3 EQUIPMENT UNDER TEST

3.1 Power supply system utilised

Power supply voltage: DC 5V
 Other (Specified blank below)

3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: 1
Serial number: Prototype

3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

- Normal

Operating Mode: Normal

Emissions tests.....: According to EN 61000-6-3, searching for the highest disturbance.

Immunity tests : According to EN 61000-6-1, searching for the highest susceptibility.

3.4 EUT configuration

(The CDF filled by the applicant can be viewed at the test laboratory.)

The following peripheral devices and interface cables were connected during the measurement:

Not Applicable

3.5 Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product.

3.6 Definition related to the performance level

- based on the used product standard
- based on the declaration of the manufacturer, requestor or purchaser

Criterion A:

Definition: normal performance within limits specified by the manufacturer, requestor or purchaser:

Criterion B:

Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention:

Criterion C:

Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention:

Criterion D:

Definition: loss of function or degradation of performance, which is not recoverable, owing to damage to hardware or software, or loss of data:

4 TEST ENVIRONMENT

4.1 Address of the test laboratory

GZ test site: A101, No.65, Zhuji Road, Tianhe District, Guangzhou, Guangdong, China

Tel: +86-20-85543113 (32 lines)

Fax: +86-20-38780406

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

4.3 Definitions of symbols used in this test report

- - The black square indicates that the listed condition, standard or equipment is applicable for this report.
- - The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

4.4 Statement of the measurement uncertainty

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

4.5 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
Radiation emission (3m)	30MHz~300MHz	±3.14dB	(1)
	300MHz~1000MHz	±3.18dB	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- (2) The actual EUT tested items in this test report, only applies to this "measurement uncertainty" in part / all of the corresponding data.

4.6 Test Description

4.6.1 Description of Standards and Results

EMISSION (EN 61000-6-3:2007+A1:2011+AC:2012)			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	EN 61000-6-3:2007+A1:2011+AC:2012	-----	N/A
Conducted disturbance at telecommunication port	EN 61000-6-3:2007+A1:2011+AC:2012	-----	N/A
Radiated disturbance	EN 61000-6-3:2007+A1:2011+AC:2012	-----	PASS
Harmonic current emissions	EN 61000-3-2:2014	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3:2013	-----	N/A
IMMUNITY (EN 61000-6-1:2007)			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic discharge (ESD)	IEC 61000-4-2: 2008	B	PASS
Radio-frequency, Continuous radiated disturbance	IEC 61000-4-3:2006 +A1:2007+A2:2010	A	PASS
Electrical fast transient (EFT)	IEC 61000-4-4:2012	B	N/A
Surge (Input a.c. power ports)	IEC 61000-4-5: 2014	B	N/A
Radio-frequency, Continuous conducted disturbance	IEC 61000-4-6: 2013	A	N/A
Power frequency magnetic field	IEC 61000-4-8: 2009	A	PASS
Voltage dips, >95% reduction	IEC 61000-4-11: 2004	B	N/A
Voltage dips, 30% reduction		B	N/A
Voltage interruptions		C	N/A
N/A is an abbreviation for Not Applicable.			

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5 TEST CONDITIONS AND RESULTS

5.1 Radiated disturbance (electric field)

For test instruments and accessories used see section 6 part 6.1.

5.1.1 Description of the test location

Test location : Semi-Anechoic chamber

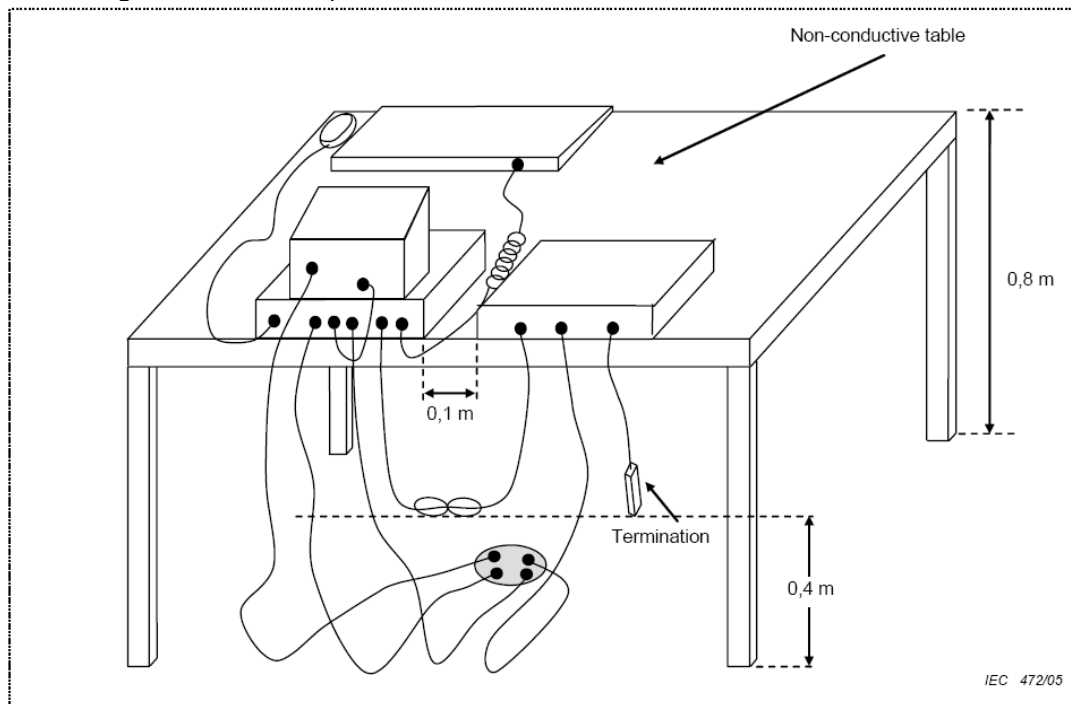
Test disturbance: 3 Meter

5.1.2 Description of the test set-up

5.1.2.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

5.1.2.2 Block Diagram of Test Setup



5.1.3 Limits of disturbance

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

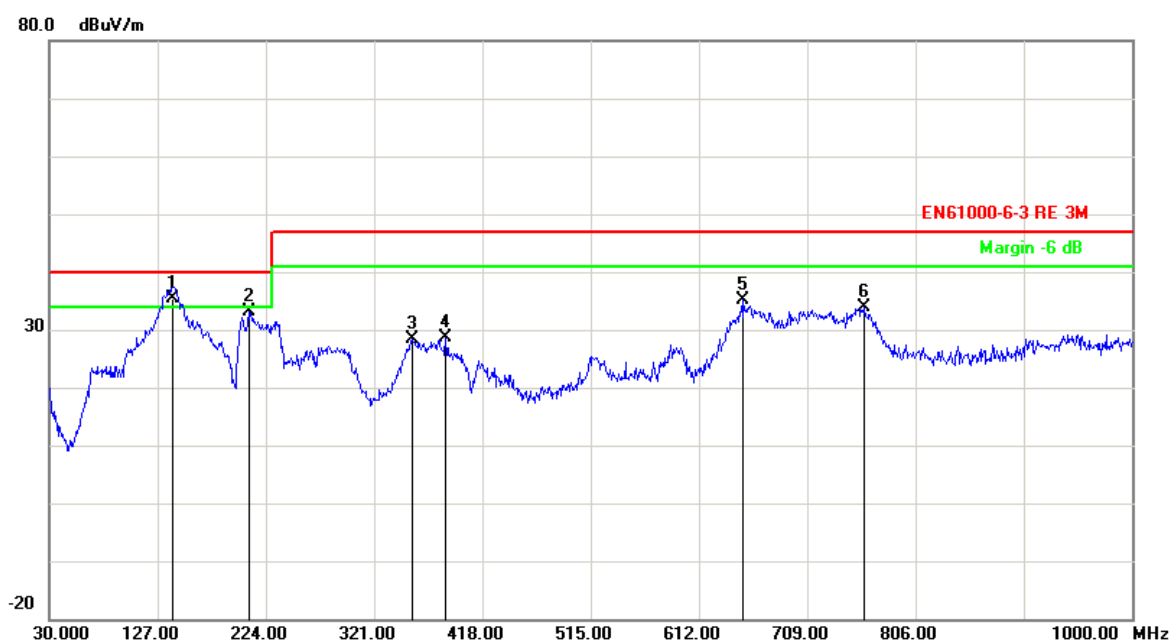
5.1.4 Test result

The requirements are	Fulfilled
Band width	120kHz
Frequency range	30 MHz - 1000 MHz
Min. limit margin	>2.95 dB at 30 - 1000 MHz

Remarks: The limits are kept. For detailed results, please see the following page(s).

5.1.5 Test protocol

Test point: Operation mode Remarks:	Horizontal Normal	Result:	<input checked="" type="checkbox"/> - passed <input type="checkbox"/> - not passed
EUT	Power bank		
Operating Condition	DC 5V		
Test Condition	Ambient Temperature: 24°C Humidity: 56%		
Operator	Jared		
MODEL NO.	MO9075		



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	140.5800	-19.19	54.67	35.48	40.00	-4.52	QP
2	208.4800	-16.04	49.13	33.09	40.00	-6.91	QP
3	354.9500	-11.19	39.50	28.31	47.00	-18.69	QP
4	385.0200	-10.25	38.98	28.73	47.00	-18.27	QP
5	650.8000	-4.58	39.74	35.16	47.00	-11.84	QP
6	760.4100	-2.63	36.42	33.79	47.00	-13.21	QP

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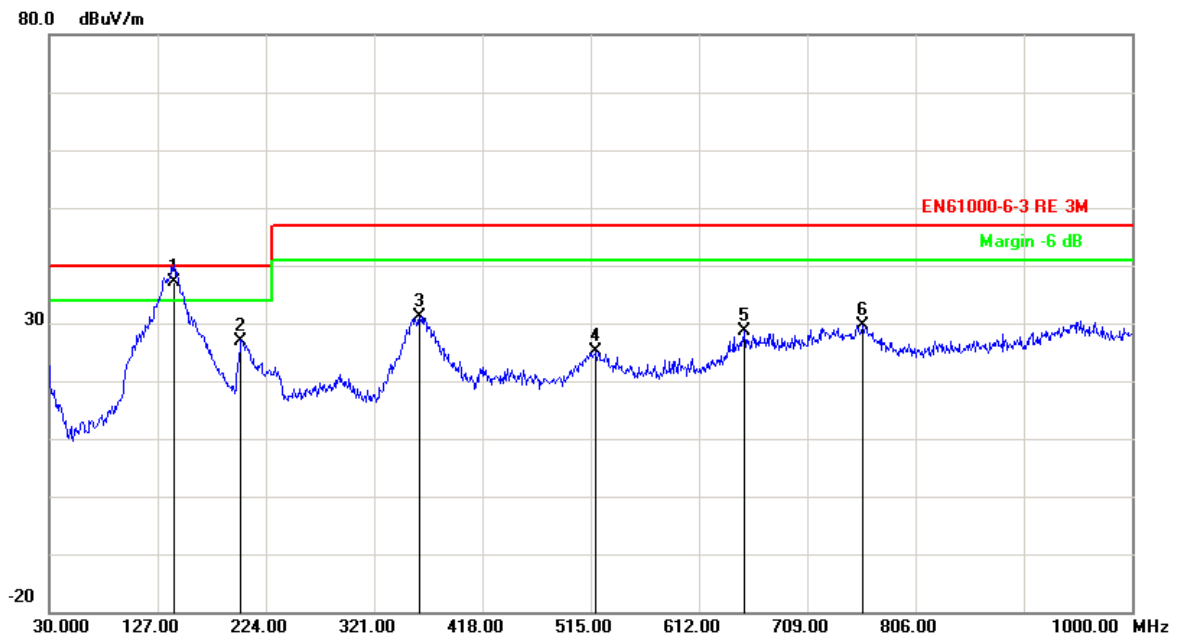
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Test point: Operation mode Remarks:	Vertical Normal	Result:	<input checked="" type="checkbox"/> - passed <input type="checkbox"/> - not passed
---	--------------------	---------	---

EUT	Power bank
MODEL NO.	MO9075
Operating Condition	DC 5V
Test Condition	Ambient Temperature: 24°C Humidity: 56%
Operator	Jared



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	141.5500	-19.15	56.20	37.05	40.00	-2.95	QP
2	201.6900	-16.26	43.26	27.00	40.00	-13.00	QP
3	361.7400	-10.97	42.13	31.16	47.00	-15.84	QP
4	519.8500	-7.51	32.65	25.14	47.00	-21.86	QP
5	652.7400	-4.54	33.26	28.72	47.00	-18.28	QP
6	758.4699	-2.65	32.35	29.70	47.00	-17.30	QP

Note: Level=Reading+Factor. Margin= Limit-Level

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5.2 Electrostatic discharge

For test instruments and accessories used see section 6 part 6.2.

5.2.1 Description of the test location

Test location :	Test location no. 2
Power supply:	DC 5V
Test condition:	Ambient Temperature: 24°C, Humidity:56%
Date of test :	06~20 July 2018
Operator :	Jared

5.2.2 Severity of levels electrostatic discharge

5.2.2.1 Severity level: Contact discharge at $\pm 4KV$ air discharge at $\pm 8KV$

Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

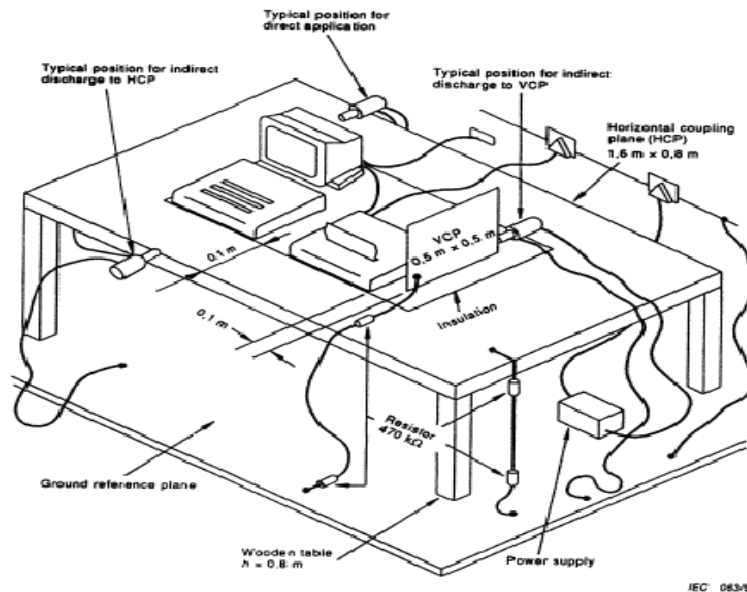
5.2.2.2 Performance criterion: B

5.2.3 Description of the test set-up

5.2.3.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

5.2.3.2 Block Diagram of Test Setup



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5.2.4 Test specification:

Contact discharge voltage:	<input checked="" type="checkbox"/> 2 kV	<input checked="" type="checkbox"/> 4 kV	
Air discharge voltage:	<input checked="" type="checkbox"/> 2 kV	<input checked="" type="checkbox"/> 4 kV	<input checked="" type="checkbox"/> 8 kV
Discharge impedance:	<input checked="" type="checkbox"/> 330 Ω / 150 pF		
Discharge factor:	<input checked="" type="checkbox"/> ≥ 1 sec.		
Number of discharges:	<input checked="" type="checkbox"/> ≥ 10		
Type of discharge:	Direct discharge	<input checked="" type="checkbox"/> Air discharge	
		<input checked="" type="checkbox"/> Contact discharge	
	Indirect discharge	<input checked="" type="checkbox"/> Contact discharge	
Polarity:	<input checked="" type="checkbox"/> Positive	<input checked="" type="checkbox"/> Negative	
Discharge location:	<input checked="" type="checkbox"/> see photo documentation of the test set-up		
	<input checked="" type="checkbox"/> all external locations accessible by hand		
	<input checked="" type="checkbox"/> horizontal plate (HCP)		
	<input checked="" type="checkbox"/> vertical coupling plate (VCP)		

5.2.5 Test result

The requirements are **Fulfilled**Performance Criterion: **B****Remarks:** During the test no deviation was detected to the selected operation mode(s).

5.3 Radiated, radio-frequency, electromagnetic field

For test instruments and accessories used see section 6 part 6.3.

5.3.1 Description of the test location

Test location :	Test location no. 2
Power supply:	DC 5V
Test condition:	Ambient Temperature: 24°C, Humidity:56%
Date of test :	06~20 July 2018
Operator :	Jared

5.3.2 Severity levels of radiated, Radio-frequency, electromagnetic field

5.3.2.1 Severity level: 3V/m and 1V/m

Level	Field strenght(V/m)
1	1
2	3
3	10
X	Special

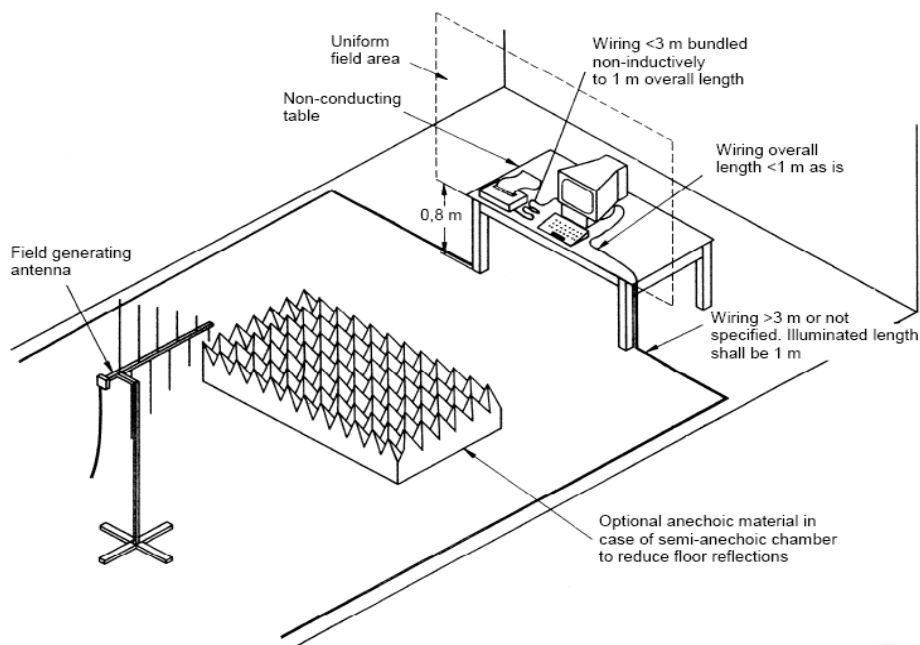
5.3.2.2 Performance criterion: A

5.3.3 Description of the test set-up

5.3.3.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

5.3.3.2 Block Diagram of Test Setup



IEC 034/06

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5.3.4 Test specification:

Frequency range:	■ 80 MHz to 1000 MHz
Field strength:	■ 3 V/m
EUT - antenna separation:	■ 3 m
Modulation:	■ AM: 80 % ■ sinusoidal 1000Hz
Frequency step:	■ 1 % with 3 s dwell time
Antenna polarisation:	■ horizontal ■ vertical

Frequency range:	■ 1400 MHz to 2000 MHz
Field strength:	■ 3 V/m
EUT - antenna separation:	■ 3 m
Modulation:	■ AM: 80 % ■ sinusoidal 1000Hz
Frequency step:	■ 1 % with 3 s dwell time
Antenna polarisation:	■ horizontal ■ vertical

Frequency range:	■ 2000 MHz to 2700 MHz
Field strength:	■ 1 V/m
EUT - antenna separation:	■ 3 m
Modulation:	■ AM: 80 % ■ sinusoidal 1000Hz
Frequency step:	■ 1 % with 3 s dwell time
Antenna polarisation:	■ horizontal ■ vertical

5.3.5 Test result

The requirements are **Fulfilled**Performance Criterion: **A****Remarks:** During the test no deviation was detected to the selected operation mode(s).

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5.4 Power frequency magnetic field

For test instruments and accessories used see section 6 part 6.4.

5.4.1 Description of the test location

Test location :	Test location no. 2
Power supply:	DC 5V
Test condition:	Ambient Temperature: 24°C, Humidity:56%
Date of test :	06~20 July 2018
Operator :	Jared

5.4.2 Severity levels of magnetic field immunity

5.4.2.1 Severity Level: 3A/m

Level	Magnetic Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X	Special

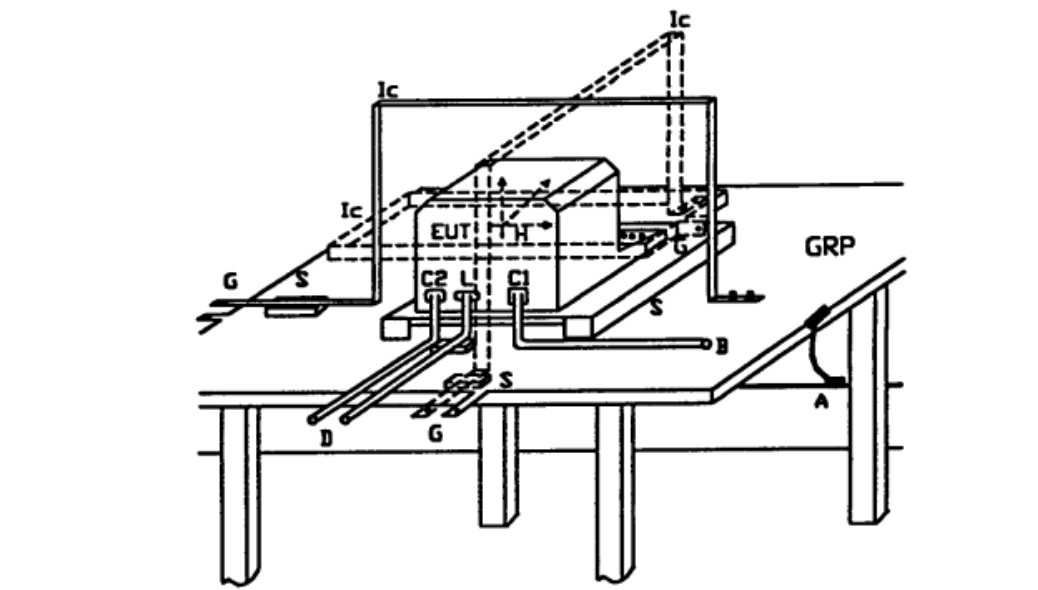
5.4.2.2 Performance Criterion: A

5.4.3 Description of the test set-up

5.4.3.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

5.4.3.2 Block Diagram of Test Setup



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5.4.4 Test specification:

Test frequency:	■ 50 Hz		
Continuous field:	■ 3 A/m		
Duration (Continuous field):	■ 60 s each Axis		
Short duration (1-3s):	■ 3 S		
Axis:	■ x-axis	■ y-axis	■ z-axis

5.4.5 Test result

The requirements are **Fulfilled**

Performance Criterion: **A**

Remarks: During the test no deviation was detected to the selected operation mode(s).

6 USED TEST EQUIPMENT

6.1

Radiated Emission(Electric field)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2018/03/20
2	EMI Test Receiver	ROHDE & SCHWARZ	ESVS 10	842885/001	2017/10/18
3	Log per Antenna	ETS	3142C	00060447	2018/03/20
4	Pre-Amplifier	EMC	EMC330	980113	2018/03/20
5	Pre-Amplifier	EMC	EMC012645	980114	2018/03/20
6	EMI Test Software	Farad	EZ-EMC	N/A	N/A

6.2

Electrostatic Discharge					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ESD Simulator	Schlöder	SESD 230	106003	2018/03/20

6.3

RF Field Strength Susceptibility					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal Generator	ROHDE & SCHWARZ	SMY 01	843215/014	2017/10/18
2	Signal Generator	ROHDE & SCHWARZ	SML03	102986	2017/10/18
3	Amplifier	KALMUS	713FC	7385-1	2017/10/18
4	Power Meter	ROHDE & SCHWARZ	NRVS	842856/049	2017/10/18
5	Field Probe	ETS	HI-6005	00075047	2017/10/18
6	RS Test Software	Farad	EZ-RS	N/A	N/A

6.4

Power Frequency Magnetic Field Susceptibility					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Power frequency mag-field generator System	EM TEST	EMS61000-8K	409001	2017/10/18

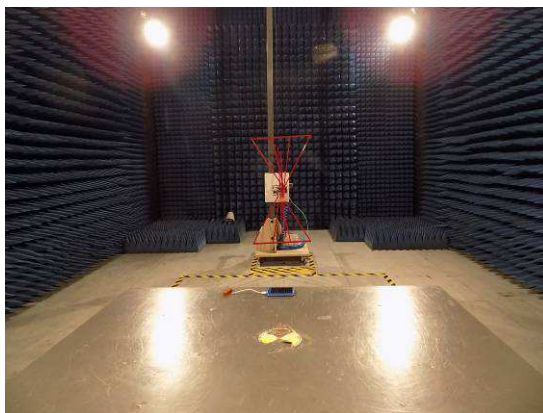
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7 TEST PHOTOGRAPHS

7.1. Photo of radiated emission measurement (R.E. Electric field)



7.2. Photo of electrostatic discharge Immunity measurement (E.S.D.)



7.3. Photo of RF field strength Immunity measurement (R.S.)



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7.4. Photo of PFM field immunity measurement (P.F.M.F.)



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8 EXTERNAL AND INTERNAL PHOTOS OF THE EUT



External view 1



External view 2



External view 3

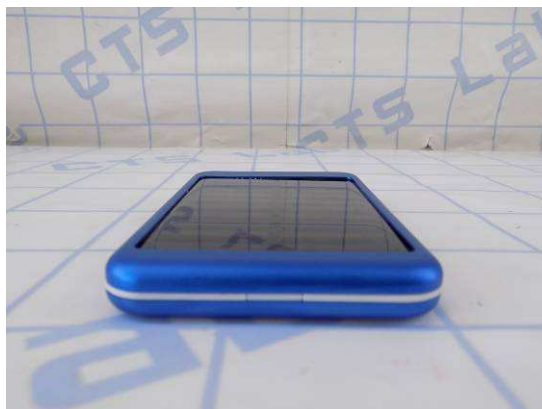
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External view 4



External view 5



External view 6

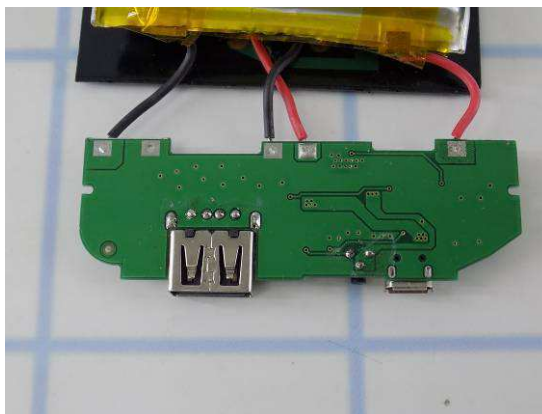
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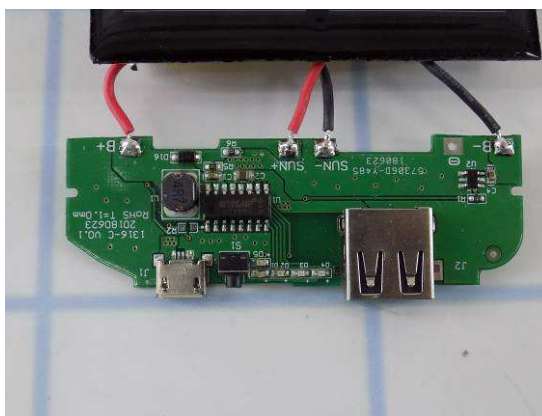
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Internal view



PCB view 1



PCB view 2

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Following Number External view

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9 Manufacturer/ Approval holder Declaration

The following identical model(s):

N/A

Belong to the tested device:

Product description: **Power bank**
Model name: **MO9075**

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Applicant : 
Address : 
Manufacture : 114628
Address : /

Report on the submitted samples said to be:

Sample Name : power bank with solar panel
Trade Mark : N/A
Style No. : MO9075
Testing Period : March 06, 2020 ~ March 19, 2020
Results : Please refer to next page(s).

TEST REQUEST	CONCLUSION
According to the customer's request, based on the performed tests on submitted sample, the result of Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), PBBs, PBDEs, Dibutyl Phthalate(DBP), Benzylbutyl Phthalate(BBP), Bis(2-ethylhexyl) Phthalate(DEHP), Diisobutyl phthalate(DIBP) content comply with the limit requirement as set of RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.	Pass

Signed for and on behalf of LCS



Daniel

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Results:
A.EU RoHS Directive 2011/65/EU and its amendment directives on XRF

Test method: With reference to IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

Seq. No.	Tested Part(s)	Results						Date of sample submission/resubmission
		Cd	Pb	Hg	Cr ^v	Br ^v		
						PBBs	PBDEs	
1	Silver metal with black plated rear case	OL	OL	BL	X	/	/	2020-03-06
2	Silver metal with bright black plated front case	OL	OL	BL	X	/	/	2020-03-06
3	White plastic border	BL	BL	BL	BL	BL	BL	2020-03-06
4	Transparent plastic	BL	BL	BL	BL	BL	BL	2020-03-06
5	White plastic switch button	BL	BL	BL	BL	BL	BL	2020-03-06
6	White foam with clear viscose	BL	BL	BL	BL	BL	BL	2020-03-06
7	Black plastic thread	BL	BL	BL	BL	BL	BL	2020-03-06
8	Red plastic thread	BL	BL	BL	BL	BL	BL	2020-03-06
9	Silver metal wire	BL	BL	BL	BL	/	/	2020-03-06
10	Solder joint	BL	OL	BL	BL	/	/	2020-03-06
11	Transparent plastic	BL	BL	BL	BL	BL	BL	2020-03-06
12	Green PCB	BL	BL	BL	BL	BL	BL	2020-03-06
13	Black soft plastic tape	BL	BL	BL	BL	BL	BL	2020-03-06
14	Solder joint	BL	BL	BL	BL	/	/	2020-03-06 2020-03-17
15	Silver metal case (J1)	BL	BL	BL	BL	/	/	2020-03-06
16	Gray plastic gasket (J1)	BL	BL	BL	BL	BL	BL	2020-03-06
17	Silver metal pin (J1)	BL	BL	BL	BL	/	/	2020-03-06
18	Silver metal case (J2)	BL	BL	BL	BL	/	/	2020-03-06
19	Gray plastic gasket (J2)	BL	BL	BL	BL	BL	BL	2020-03-06
20	Silver metal pin (J2)	BL	BL	BL	BL	/	/	2020-03-06
21	Silver Perforated Metal Sheet (S1)	BL	BL	BL	BL	/	/	2020-03-06
22	Black plastic button (S1)	BL	BL	BL	BL	BL	BL	2020-03-06
23	Silver metal sheet (S1)	BL	BL	BL	X	/	/	2020-03-06
24	Black plastic base (S1)	BL	BL	BL	BL	BL	BL	2020-03-06
25	Silver metal pin (S1)	BL	BL	BL	BL	/	/	2020-03-06

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Seq. No.	Tested Part(s)	Results						Date of sample submission/resubmission
		Cd	Pb	Hg	Cr ^v	Br ^v		
						PBBs	PBDEs	
26	Gray ceramic (L1)	BL	BL	BL	BL	BL	BL	2020-03-06
27	Copper coil (L1)	BL	BL	BL	BL	/	/	2020-03-06
28	White body (D4)	BL	BL	BL	BL	BL	BL	2020-03-06
29	Black body (R1)	BL	BL	BL	BL	BL	BL	2020-03-06
30	Brown body (C4)	BL	BL	BL	BL	BL	BL	2020-03-06
31	Black body (U2)	BL	BL	BL	BL	BL	BL	2020-03-06
32	Black body (U1)	BL	BL	BL	BL	BL	BL	2020-03-06
33	Brown body (C2)	BL	BL	BL	BL	BL	BL	2020-03-06
34	Black body (R6)	BL	BL	BL	BL	BL	BL	2020-03-06
35	Black body (D16)	BL	BL	BL	BL	BL	BL	2020-03-06
36	Solder joint	BL	BL	BL	BL	/	/	2020-03-06 2020-03-17
37	Green PCB	BL	BL	BL	BL	X	X	2020-03-06
38	Black plastic wire cover (connected to battery)	BL	BL	BL	BL	BL	BL	2020-03-06
39	Red plastic wire cover (connected to battery)	BL	BL	BL	BL	BL	BL	2020-03-06
40	Silver metal wire (connected to battery)	BL	BL	BL	BL	/	/	2020-03-06
41	Silver metal with blue plated case	BL	OL	BL	X	/	/	2020-03-06
42	Silver metal with silver plated case	OL	OL	BL	X	/	/	2020-03-06

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Note:

- (1) Results were obtained by XRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013.

Element	Unit	Non-metal	Metal	Composite Material
Cd	mg/kg	BL≤70-3σ<X <130+3σ≤OL	BL≤70-3σ<X <130+3σ≤OL	BL≤50-3σ<X <150+3σ≤OL
Pb	mg/kg	BL≤700-3σ<X <1300+3σ≤OL	BL≤700-3σ<X <1300+3σ≤OL	BL≤500-3σ<X <1500+3σ≤OL
Hg	mg/kg	BL≤700-3σ<X <1300+3σ≤OL	BL≤700-3σ<X <1300+3σ≤OL	BL≤500-3σ<X <1500+3σ≤OL
Cr	mg/kg	BL≤700-3σ<X	BL≤700-3σ<X	BL≤500-3σ<X
Br	mg/kg	BL≤300-3σ<X	--	BL≤250-3σ<X

Note:

- BL = Below Limit
OL = Over Limit
X = Inconclusive

- (2) The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- (3) The maximum permissible limit is quoted from the document 2015/863/EC amending RoHS directive 2011/65/EU:
- (4) ▼=For restricted substances PBBs and PBDEs, the results show the total Br content; The restricted substance was Cr(VI), and the results showed the total Cr content

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RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium (Cd)	100
Lead (Pb)	1000
Mercury (Hg)	1000
Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000
Polybrominated diphenylethers (PBDEs)	1000
Dibutyl Phthalate(DBP)	1000
Benzylbutyl Phthalate(BBP)	1000
Bis(2-ethylhexyl) Phthalate(DEHP)	1000
Diisobutyl phthalate(DIBP)	1000

Disclaimers:

This XRF Screening report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes.

The result shown in this XRF screening report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

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B. EU RoHS Directive 2011/65/EU and its amendment Directives 2015/863/EU on Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs, PBDEs, DBP, BBP, DEHP, DIBP content.

Test method:

Lead(Pb) & Cadmium(Cd) Content:

With reference to IEC 62321-5:2013, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-OES)

Mercury(Hg) Content:

With reference to IEC 62321-4:2013+AMD1:2017 CSV, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-OES)

Hexavalent Chromium(Cr(VI)) Content:

With reference to IEC 62321-7-1:2015 or IEC 62321-7-2:2017, by alkaline digestion and analysis was performed by UV-visible spectrophotometer (UV-Vis)

PBBs & PBDEs Content:

With reference to IEC 62321-6:2015, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS)

BBP DBP DEHP & DIBP Content:

With reference to IEC 62321-8:2017, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS)

1) The test results of Lead (Pb) and Cadmium (Cd)

Item	Unit	MDL	Results					Limit
			(1)	(2)	(10)	(41)	(42)	
Lead Content (Pb)	mg/kg	5	176	97	985	171	285	1000

Item	Unit	MDL	Results			Limit
			(1)	(2)	(42)	
Cadmium Content (Cd)	mg/kg	5	N.D.	N.D.	N.D.	100

2) The test results of Hexavalent Chromium (Cr(VI))(metal)

Item	Unit	MDL	Results					Limit
			(1)	(2)	(23)	(41)	(42)	
Hexavalent Chromium(Cr(VI))▼	ug/cm ²	0.10	N.D.	N.D.	N.D.	N.D.	N.D.	-

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Note:

- MDL = Method Detection Limit
- /= Not apply
- LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is $0.10 \mu\text{g}/\text{cm}^2$
- ▼ = a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than $0.13\mu\text{g}/\text{cm}^2$. The sample coating is considered to contain Cr(VI)
b. The sample is negative for Cr(VI) if Cr(VI) is N.D.(concentration less than $0.10\mu\text{g}/\text{cm}^2$). The sample coating is considered a non- Cr(VI) based coating
c. The result between $0.10\mu\text{g}/\text{cm}^2$ and $0.13\mu\text{g}/\text{cm}^2$ is considered to be inconclusive, unavoidable coating variations may influence the determination
- Information on storage conditions and production date of the tested samples is unavailable and thus Cr(VI) results represent status of the sample at the time of testing
- $\text{mg}/\text{kg} = \text{ppm} = \text{parts per million}$
- N.D.=Not Detected(<MDL or LOQ)
- #1 According to RoHS directive 2011/65/EU and its amendments, Lead is exempted in glass of cathode ray tubes, electronic components and fluorescent tubes.
- #2 According to RoHS directive 2011/65/EU and its amendments, Lead is exempted in electronic ceramic parts (e.g. piezoelectronic devices).
- #3 According to RoHS directive 2011/65/EU and its amendments, Lead is exempted as an alloying element in Copper containing up to 4% (40000ppm) by weight.
- #4 According to RoHS directive 2011/65/EU and its amendments, Lead is exempted in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead).
- #5 According to the statement provided by the customer, according to RoHS directive 2011/65/EU and its amendments, Lead is exempted as an alloying element in Aluminum containing up to 0.4% (4000ppm) by weight.
- #6 According to the statement provided by the customer, according to RoHS directive 2011/65/EU and its amendments, Cadmium and its compounds in electrical contact is exempted.
- #7 According to the statement provided by the customer, according to RoHS directive 2011/65/EU and its Amendments, Lead is exempted in steel for machining purposes and in galvanised steel containing up to 0.35% (3500ppm) by weight.
- Flow chart appendix is included.
- Photo appendix is included.

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3) The test results of DBP、BBP、DEHP & DIBP

Item	Unit	MDL	Results				Limit
			3	4	5	6	
Dibutyl Phthalate(DBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Benzylbutyl Phthalate(BBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Bis(2-ethylhexyl) Phthalate(DEHP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

Item	Unit	MDL	Results				Limit
			7	8	11	12	
Dibutyl Phthalate(DBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Benzylbutyl Phthalate(BBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Bis(2-ethylhexyl) Phthalate(DEHP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

Item	Unit	MDL	Results				Limit
			13	16	19	22	
Dibutyl Phthalate(DBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Benzylbutyl Phthalate(BBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Bis(2-ethylhexyl) Phthalate(DEHP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

Item	Unit	MDL	Results				Limit
			24	26	28	29	
Dibutyl Phthalate(DBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Benzylbutyl Phthalate(BBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Bis(2-ethylhexyl) Phthalate(DEHP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

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Item	Unit	MDL	Results				Limit
			30	31	32	33	
Dibutyl Phthalate(DBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Benzylbutyl Phthalate(BBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Bis(2-ethylhexyl) Phthalate(DEHP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	1000

Item	Unit	MDL	Results					Limit
			34	35	37	38	39	
Dibutyl Phthalate(DBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Benzylbutyl Phthalate(BBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Bis(2-ethylhexyl) Phthalate(DEHP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	100	N.D.	N.D.	N.D.	N.D.	N.D.	1000

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4) The test results of PBBs & PBDEs

Item	Unit	MDL	Results	Limit
			(37)	
Polybrominated Biphenyls (PBBs)				
Monobromobiphenyl	mg/kg	5	N.D.	
Dibromobiphenyl	mg/kg	5	N.D.	
Tribromobiphenyl	mg/kg	5	N.D.	
Tetrabromobiphenyl	mg/kg	5	N.D.	
Pentabromobiphenyl	mg/kg	5	N.D.	
Hexabromobiphenyl	mg/kg	5	N.D.	
Heptabromobiphenyl	mg/kg	5	N.D.	
Octabromobiphenyl	mg/kg	5	N.D.	
Nonabromodiphenyl	mg/kg	5	N.D.	
Decabromodiphenyl	mg/kg	5	N.D.	
Total content	mg/kg	/	N.D.	1000
Polybrominated Diphenylethers (PBDEs)(Mon-Deca)				
Monobromodiphenyl ether	mg/kg	5	N.D.	
Dibromodiphenyl ether	mg/kg	5	N.D.	
Tribromodiphenyl ether	mg/kg	5	N.D.	
Tetrabromodiphenyl ether	mg/kg	5	N.D.	
Pentabromodiphenyl ether	mg/kg	5	N.D.	
Hexabromodiphenyl ether	mg/kg	5	N.D.	
Heptabromodiphenyl ether	mg/kg	5	N.D.	
Octabromodiphenyl ether	mg/kg	5	N.D.	
Nonabromodiphenyl ether	mg/kg	5	N.D.	
Decabromodiphenyl ether	mg/kg	5	N.D.	
Total content	mg/kg	/	N.D.	1000

Remark:

- mg/kg = ppm
- N.D. = Not detected
- MDL=Method detected limited
- Flow chart appendix is included
- Photo appendix is included.

TEST REPORT

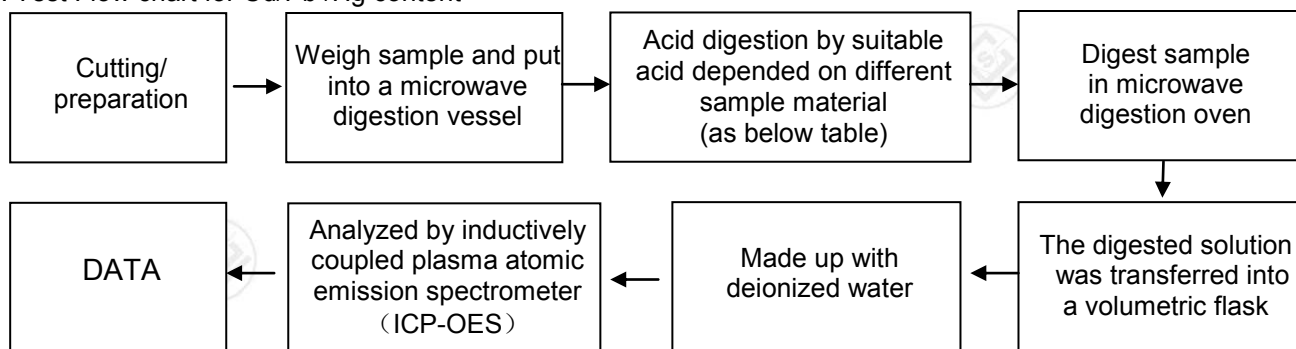
Report No.: LCS200303038AR

Date: 2020.03.19

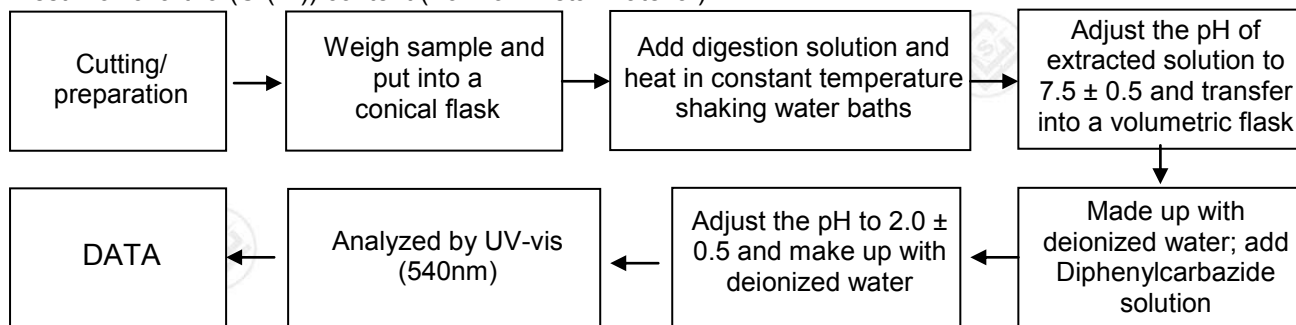
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Appendix

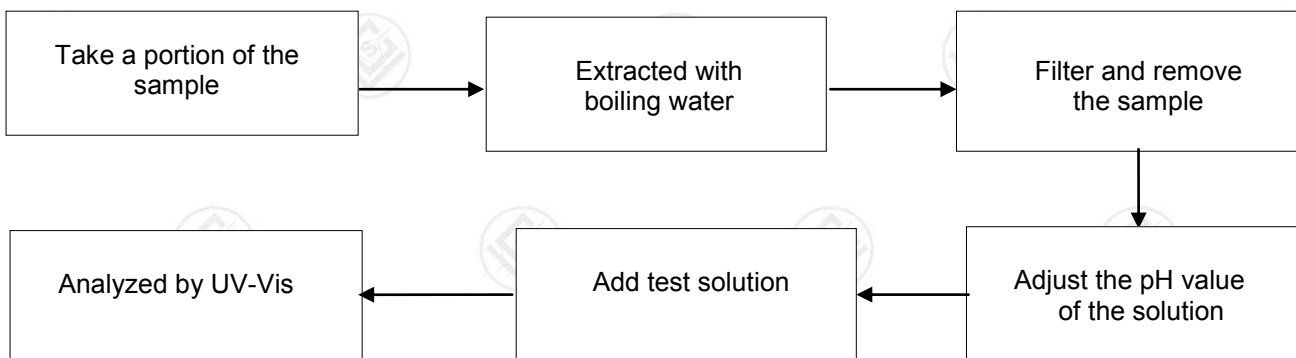
1. Test Flow chart for Cd/Pb /Hg content



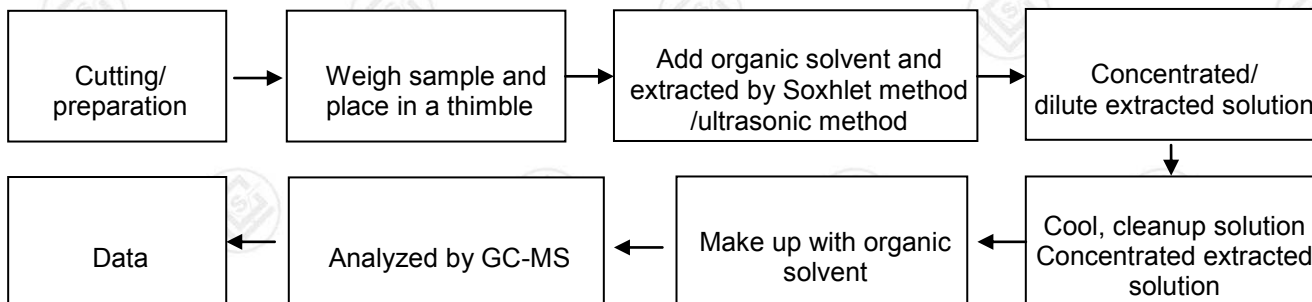
2. Test Flowchart for(Cr(VI)) content (For non-metal material)



Test Flowchart for (Cr(VI)) content (For metal material)



3. Test Flow chart for PBBs & PBDEs & DBP & BBP & DEHP & DIBP content



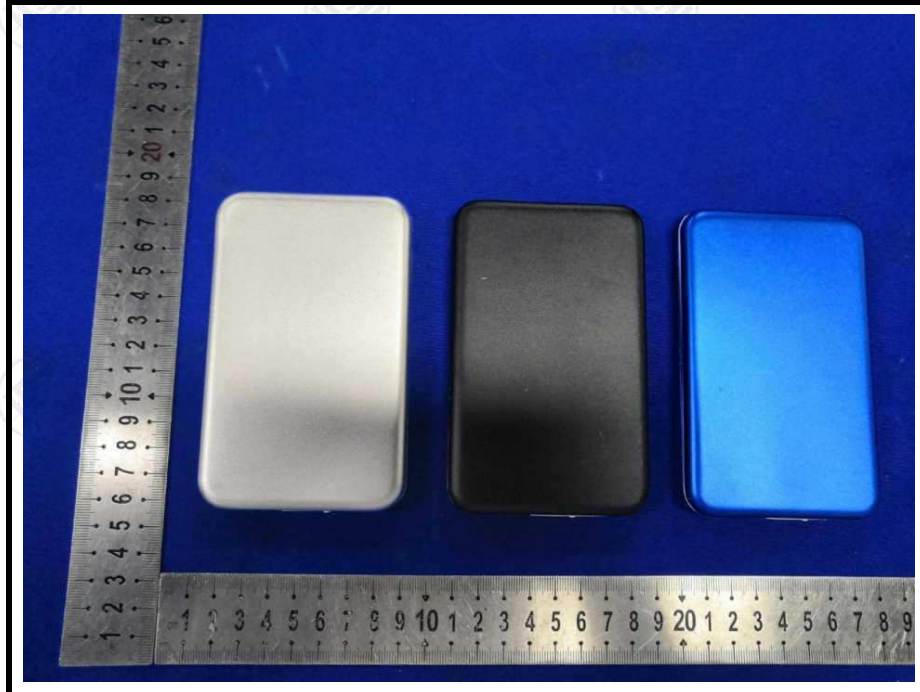
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The photo of the sample

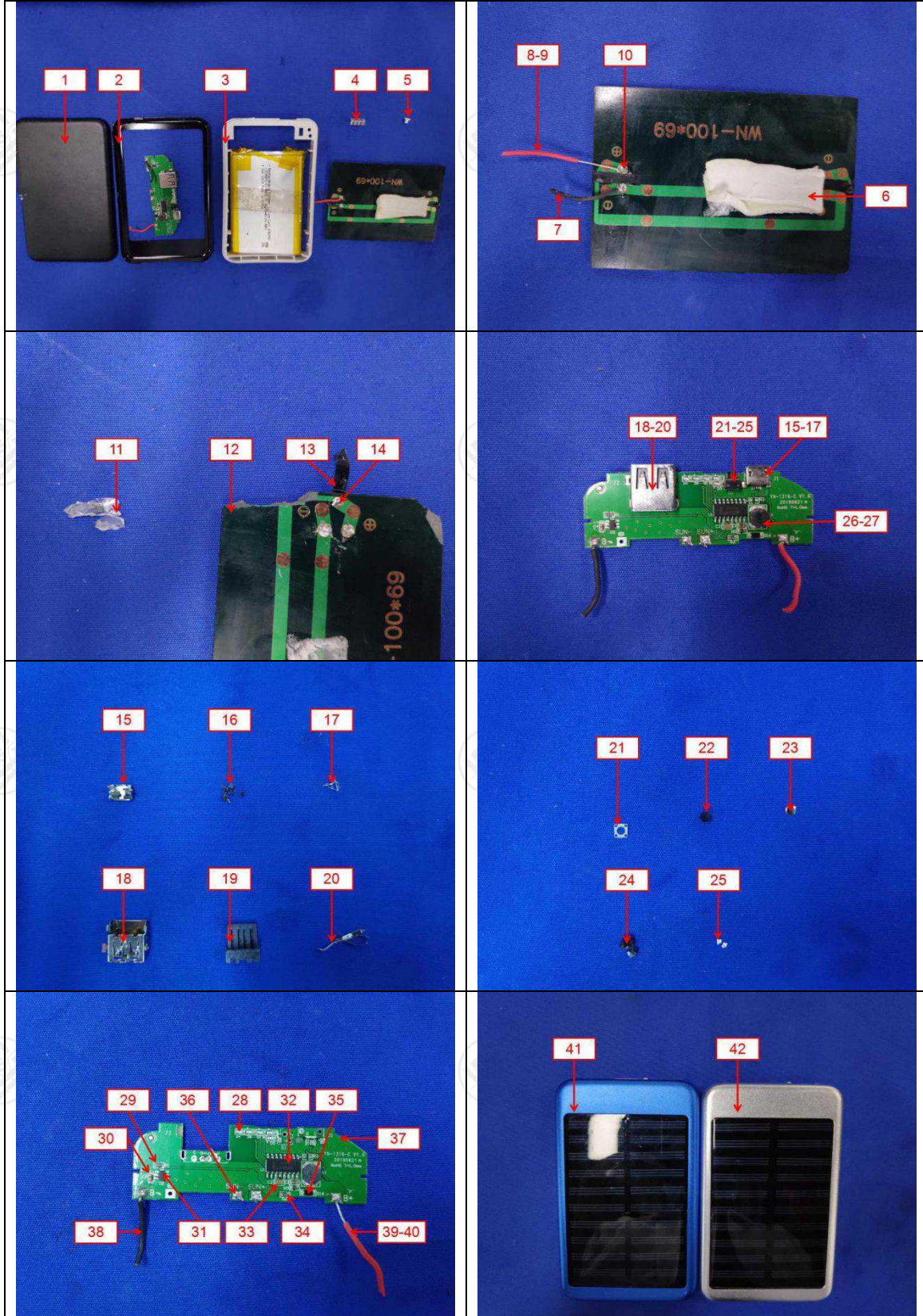


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***** End of Report *****

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Statement:

1. The test report is considered invalidated without approval signature, special seal on the perforation.
2. The result(s) shown in this report refer only to the sample(s) tested.
3. Without written approval of LCS, this report can't be reproduced except in full.
4. The sample(s) and sample information was/were provided by the client who should be responsible for the authenticity which LCS hasn't verified.
5. In case of any discrepancy between the English version and Chinese version of the testing reports(if generated), the Chinese version shall prevail.

TEST REPORT

APPLICANT :
ADDRESS :
SAMPLE DESCRIPTION : power bank with solar panel
ITEM NO. : MO9075
MANUFACTURER :
COUNTRY OF ORIGIN : China
COUNTRY OF DESTINATION : Nederland
SAMPLE RECEIVED DATE : 05-Mar-2020
TURN AROUND TIME : 05-Mar-2020 to 10-Mar-2020

The following test item(s) was/were performed on submitted sample(s) and/or component(s) confirmed by applicant

TEST REQUESTED	TEST METHOD/REGULATION	RESULT
Polycyclic Aromatic Hydrocarbons (PAHs)	REACH Annex XVII, Entry 50	Pass

Samples are obtained by express delivery, Results obtained refer only to samples, products or material received in Laboratory, as described in point related to sample description, and tested in conditions shown in present report. Eurofins Product Testing Service (Shanghai) Co., Ltd ensures that this job has been performed according to our Quality System and complying contract and legal conditions. If you happen to have any comments, please do it by sending email to info.sh@eurofins.com and referring to this report number. Reproduction of this document is only valid if it is done completely and under the written permission of Eurofins Product Testing Service (Shanghai) Co., Ltd. If you happen to have any complaints, please do it by sending email to chinacomplaint@eurofins.com and referring to this report number.

Eurofins (Shanghai) contact information**Customer service:** ElsieWu@eurofins.com / +86 216 1819 181**Sales specialist:** AmyXu@eurofins.com / +86 216 1819 181

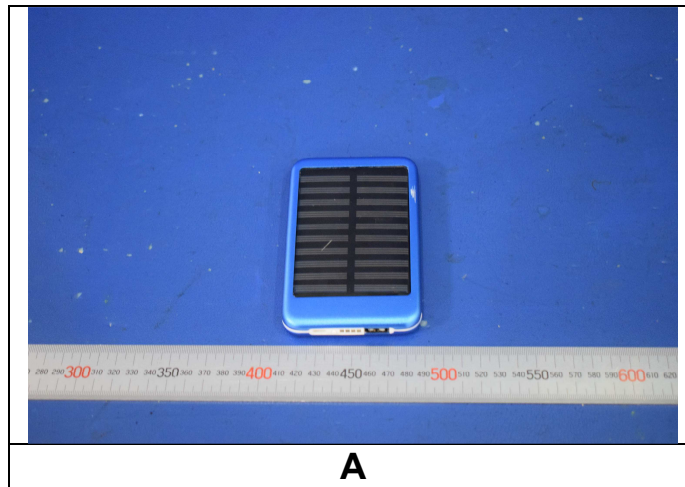
***** FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S) *****

Signed for and on behalf of
Eurofins Product Testing Service (Shanghai) Co., Ltd



Joyce Liu
Lab Manager

SAMPLE PHOTO(S)



EFSH20030459-CG-01

TO BE CONTINUED

COMPONENT LIST

Component No.	Component	Sample No.
1	White plastic body	A
2	Black plastic (socket)	A
3	Transparent plastic (solar panel)	A

TO BE CONTINUED

TEST RESULT

Polycyclic Aromatic Hydrocarbons (PAHs)

Test Request: Polycyclic Aromatic Hydrocarbons (PAHs) content as specified in Regulation (EU) 2015/326 amending entry 50 of Annex XVII of REACH Regulation (EC) No 1907/2006.

Test Method: Solvent extraction and quantification by gas chromatography-mass selective detection (GC-MS) with respect to AfPS GS 2014:01 PAK (PAK=PAHs) requirement.

Tested Item(s)	CAS No.	Unit	Limit	MDL	Result	
					1+2	3
For rubber or plastic will direct contact with skin and mouth.						
Benzo(a)anthracene	56-55-3	mg/kg	1	0.2	ND	ND
Chrysene	218-01-9	mg/kg	1	0.2	ND	ND
Benzo(b)fluoranthene	205-99-2	mg/kg	1	0.2	ND	ND
Benzo(j)fluoranthene	205-82-3	mg/kg	1	0.2	ND	ND
Benzo(k)fluoranthene	207-08-9	mg/kg	1	0.2	ND	ND
Benzo(a)pyrene	50-32-8	mg/kg	1	0.2	ND	ND
Dibenzo(a,h)anthracene	53-70-3	mg/kg	1	0.2	ND	ND
Benzo(e)pyrene	192-97-2	mg/kg	1	0.2	ND	ND

Remark:

mg/kg = milligram per kilogram

MDL = method detection limit

ND = Not detected, less than MDL

According to client's request, tests are combination tests. The experimental results are the total result of mixed samples.

END OF THE REPORT



Report No. : CESMSDS191203021

Material Safety Data Sheet

材料安全数据表

Name of Sample: Li-ion Polymer Battery
产品名称 : 锂离子聚合物电池

Model Specification:
产品型号 : 606090

Client: Guangdong CVATOP New Energy Technology Co., Ltd.
委托单位 : 广东嘉拓新能源科技有限公司



国家轻工业电池及储能材料质量监督检测中心
先进储能材料国家工程研究中心有限责任公司检测中心

National Light Industry Quality Supervision and Testing Center of Battery Energy Storage Materials
Test Center of National Engineering Research Center of Advanced Energy Storage Materials Co., Ltd.

说 明

Marking

1. 报告无“报告专用章”无效。

The test report is invalid without “Special seal for report”.

2. 报告无批准人、审核人和编制人签名无效。

The test report is invalid without the signatures of Approver, Reviewer and Testing engineer.

3. 报告涂改无效。

The test report is invalid if altered.

4. 对检测报告若有异议，应于收到报告之日起十五天内向检测单位提出。

Objections to the test report must be submitted to Test Center within 15 days.

5. 报告仅对送检样品负责。

The test report is Valid for the tested samples only.

检测单位地址：广东省深圳市宝安区新安街道宝石路29号蓝坤集团大厦B栋一楼B102

Lab Address: No.B102, 1/F., Lankun Group Building B, No.29, Baoshi Road, Xin'an Street, Bao'an District, Shenzhen, Guangdong, China

电话(TEL): 86-755-22678313

传真(FAX): 0755-22678299

邮政编码(Post Code): 518101

网址(Website): www.cescert.com

E-mail: service@cescert.com

Material Safety Data Sheet

材料安全数据表

Section 1——Chemical Product and Company Identification		
化学品及企业标识		
Product Name: 产品名称:	Li-ion Polymer Battery 锂离子聚合物电池	
Type/Mode: 样品型号:	606090 (3.7V 4000mAh 14.8Wh)	
Commissioned by: 委托单位:	Guangdong CVATOP New Energy Technology Co., Ltd. 广东嘉拓新能源科技有限公司	
Commissioner address: 委托单位地址:	Yongwei mansion, stone row avenue, shipai town, dongguan city, guangdong province 广东省东莞市石排镇石排大道永威大厦	
Manufacturer: 生产单位:	Guangdong CVATOP New Energy Technology Co., Ltd. 广东嘉拓新能源科技有限公司	
Inspection according to: 鉴定依据:	EEC Directive 93/112/EC UN "Recommendations on the TRANSPORT OF DANGEROUS GOODS" 联合国《关于危险品货物运输的建议书》	
Emergency telephone call: 应急电话:	0769-82296333	
Receiving Date: 接样日期:	2019-12-03	Date of issue: 签发日期:



Approved by:



Reviewed by:



Written by:



Section 2. Composition/information on Ingredient

成分/组成信息

Chemical Name 化学品名称	Chemical Formula 化学式	CAS No. CAS 号	Composition 成份 (in % by weight) (重量百分比)
三元材料 /Lithium-nickel-cobalt-manganese oxides	Li(NiCoMn)O ₂	113066-89-0	25~35
碳/Graphite	C	7782-42-5	15~20
铝/Aluminum	Al	7429-90-5	21~23
铜/Copper	Cu	7440-50-8	10~11
电解液/Electrolyte	LiPF ₆ +carbonate	623-53-0/ 21324-40-3	10~15
聚偏氟乙烯/Polyvinylidene Fluoride	(CH ₂ -CF ₂) _n	24937-79-9	1~5
乙炔黑/Acetylene Black	C	1333-86-4	0.5~3

Section 3. Hazards Identification

危险性概述

Explosive risk 爆炸危险性	This article does not belong to the explosion dangerous goods 该物品不属于爆炸危险品
Flammable risk 易燃危险性	This article does not belong to the flammable material 该物品不属于易燃危险品
Oxidation risk 氧化危险性	This article does not belong to the oxidation of dangerous goods 该物品不属于氧化危险品
Toxic risk 毒害危险性	This article does not belong to the toxic dangerous goods 该物品不属于毒害危险品
Radioactive risk 放射危险性	This article does not belong to the radiation of dangerous goods 该物品不属于放射危险品
Mordant risk 腐蚀危险性	This article does not belong to the corrosion of dangerous goods 该物品不属于腐蚀危险品
Other risk 其他危险性	This article is Li-ion Polymer Battery Watt hour rate 14.8Wh, which belong to the Lithium ion batteries. 该物品为锂离子聚合物电池, 瓦时率14.8Wh, 属于锂离子电池。

Section 4. First aid measures

急救措施

Eye: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

眼睛: 万一接触, 立即用大量的清水冲洗至少 15 分钟, 翻起上下眼睑, 直到化学的残留物消失为止,

迅速就医。

Skin: Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

皮肤: 万一接触, 用大量水冲洗至少 15 分钟, 同时除去污染的衣物和鞋子, 迅速就医。

Inhalation: Remove from exposure and move to fresh air immediately. Use oxygen if available.

吸入: 立即从暴露处移至空气清新处, 如果呼吸困难给予输氧, 立即就医。

Ingestion: Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious.

Call a physician

食入: 饮用两杯牛奶或水。如果当事人仍然清晰可以采取催吐的方法, 并且立即就医。

Section 5. Fire-fighting measures 消防措施

Flash Point: N/A.

燃点: 不适用

Auto-Ignition Temperature: N/A.

自燃温度: 不适用

Extinguishing Media: Water, CO₂.

灭火介质: 大量水 (降温), 二氧化碳

Special Fire-Fighting Procedures: Self-contained breathing apparatus.

特殊灭火程序: 自给式呼吸器

Unusual Fire and Explosion Hazards: Cell may vent when subjected to excessive heat-exposing battery contents.

异常火灾或爆炸: 当电芯暴露于过热的环境中时, 安全阀可能会打开。

Hazardous Combustion Products: Carbon monoxide, carbon dioxide, lithium oxide fumes.

燃烧产生的危险物品: 一氧化碳, 二氧化碳, 锂氧化物烟气

Section 6. Accidental release measures 泄露应急处理

Steps to be taken in case Material is Released or Spilled If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

为防止电池材料泄露或释放采取的措施如果电池内部材料泄露, 试验人员应立刻撤离试验区直到烟气消散。将通风设备打开吹散危险性气体。用抹布擦净试验区, 清除溢出的液体, 将泄露电池放进塑料袋中, 然后放进钢制容器。避免皮肤和眼睛接触或吸入有害气体。

Waste Disposal Method: It is recommended to discharge the battery to the end, to use up the metal

lithium inside the battery, and to bury the discharged battery in soil..

废弃物处置方法: 建议将电池完全放电, 消耗电池内部的锂金属, 并且深埋于土壤中。

Section 7. Handling and storage

操作处置和储存

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

禁止打开、毁坏或焚烧电池, 因为电池有可能在这些处理过程中发生爆炸、破裂或泄露等事故。禁止将电池短路、过充、强制放电或扔入火中。禁止挤压刺穿电池或将电池浸入溶液中。

Precautions to be taken in handling and storing Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

操作处置和储存中的防范措施禁止物理或电滥用, 禁止高温储存, 最好将电池储存在阴凉、干燥、通风及温度变化较小的环境中。禁止将电池接触加热设备或将电池直接暴露与阳光中。

Other Precautions The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity

其他要注意的防范措施拆解、挤压、直接放入火中或高温条件下, 电池可能发生爆炸和燃烧。禁止短接或将电池正负极错误的安装在设备中。

Section 8. Exposure controls/personal protection

接触控制/个人防护

Respiratory Protection In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use.

呼吸防护 当电池排气阀打开时, 应尽量使通风设备开至最大, 避免将打开排气阀的电芯局限在某一狭窄空间内。正常操作条件下, 呼吸保护是不必要的。

Ventilation Not necessary under conditions of normal use.

通风条件 正常使用条件下不必考虑。

Protective Gloves Not necessary under conditions of normal use.

防护手套 正常使用条件下不必考虑。

Other Protective Clothing or Equipment Not necessary under conditions of normal use.

其他防护服装或设备 正常使用条件下不必考虑。

Personal Protection is recommended for venting battery Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

电池开阀试验时应做好个人防护呼吸防护, 防护手套, 防护服装和有护边的安全玻璃罩都是要准备的。

Section 9. Physical and chemical properties

物理和化学特性

Appearance: Prismatic

外形：棱柱形

Ref, No.: CESUN180108012-M1

认证编号：CESUN180108012-M1

Odour: If leaking, smells of medical ether

气味：泄漏时，有刺激性气味。

pH: Not applicable as supplied.

酸碱度：不适用

Flash Point: Not applicable unless individual components exposed.

闪点：针对单个组分暴露情况，其他不适用。

Flammability: Not applicable unless individual components exposed.

易燃度：针对单个组分暴露情况，其他不适用。

Relative density: Not applicable unless individual components exposed.

相对密度：针对单个组分暴露情况，其他不适用。

Solubility (water): Not applicable unless individual components exposed

溶解性（水溶性）：针对单个组分暴露情况，其他不适用。

Solubility (other): Not applicable unless individual components exposed.

溶解性（其他）：针对单个组分暴露情况，其他不适用

Section 10. Stability and reactivity

稳定性和反应活性

Stability: Product is stable under conditions described in Section 7.

稳定性：产品在第7节所述的条件下稳定。

Conditions to Avoid : Heat above 70°C or incinerate. Deform. Mutilate. Crush. Disassemble. Overcharge. Short circuit. Expose over a long period to humid conditions.

应避免的条件：加热 70°C 以上或焚烧、变形、毁坏、粉碎、拆卸、过充电、短路，长时间暴露在潮湿的条件下。

Materials to avoid: Oxidising agents, alkalis, water.

应避免的材料：氧化剂，碱，水。

Hazardous Decomposition Products : Toxic Fumes, and may form peroxides.

危险分解物：有毒烟雾，并可能形成过氧化物。

Hazardous Polymerization : N/A.

聚合危害：不适用

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.

如果发生泄露，避免与强氧化剂，无机酸，强碱，卤代烃接触。

Section 11. Toxicological information

毒理学资料

Signs & symptoms: None, unless battery ruptures.

标志及症状: 无, 除非电池破裂。

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.
内部物质暴露的情况下, 蒸汽烟雾可能对眼睛和皮肤的刺激性。

Inhalation: Lung irritant.

吸入: 对肺有刺激性。

Skin contact: Skin irritant.

皮肤接触: 对皮肤刺激性。

Eye contact: Eye irritant

眼睛接触: 对眼睛有刺激性。

Ingestion: Poisoning if swallowed.

食入: 吞下中毒。

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to server irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

下列情况下会危险人员身体健康: 如果与电池内部材料直接接触, 皮肤可能会出现干燥、灼烧等轻微或严重的刺激, 并且损坏靶器官的神经, 肝脏和肾脏。

Section 12. Ecological information

生态学资料

Mammalian effects: None known at present.

对哺乳动物的影响: 目前未知。

Eco-toxicity: None known at present.

生态毒性: 目前未知。

Bioaccumulation potential: Slowly Bio-degradable

生物体内积累: 慢慢地生物降解。

Environmental fate: None known environmental hazards at present.

环境危害: 目前没有已知的环境危害。

Section 13. Disposal consideration

废弃处置

Do not incinerate, or subject cells to temperature in excess of 70°C, Such abuse can result in loss of seal leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

禁止焚烧, 或使电池温度超过70°C, 这种滥用可导致泄漏和/或电池爆炸。应按照相应的地方性法规处理。

Section 14. Transport information

运输信息

Label for conveyance: Lithium Battery Label, or Lithium Battery Class 9 Hazard Label, or Cargo

Aircraft Only Label.

运输标签: 锂电池标签, 或锂电池九类危险品标签, 或仅限货机标签

UN Number: 3480, or 3481

UN 编号: 3480 或 3481

Packaging Group: N/A

包装等级: 不适用

Marine pollutant: No

海洋污染物: 无

Proper Shipping name: Lithium Ion Batteries(Including Lithium Polymer Batteries) , Lithium Ion Battery Packed With Equipment, Lithium Ion Battery Contained In Equipment

正确的装运名称: 锂离子电池(包括锂聚合物电池), 或锂离子电池与设备包装在一起, 或锂离子电池安装在设备中

Transport information: Lithium ion battery is of a type proved to meet the Requirements of each test in the UN MANUAL OF TESTS AND CRITERIA, Part III, sub-section 38.3 (Report No. : CESUN180108012-M1)

The lithium-ion battery with a watt-hour rating not exceeding 100Wh or the cell with the watt-hour rating is not exceeding 20Wh, The lithium-ion battery according to Section II/Section IB of PACKING INSTRUCTION 965, or Section II of PACKING INSTRUCTION 966~967 of the IATA Dangerous Goods Regulations 61th Edition may be transported.

The goods shall be complied with the requirements of special provision 188 of IMDG CODE (Amdt. 39-18) 2018 , The goods to be transport as Non-restricted Good

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

运输信息: 锂离子电池已通过联合国《试验和标准手册》第III部分 38.3 小节相应测试要求, (报告编号: CESUN180108012-M1)。

锂离子电池瓦时额定值不超过 100Wh 或者锂离子电芯瓦时额定值不超过 20Wh, 根据第 61 版 IATA DGR 手册 965 第 II 节/第 IB 节或 966~967 第 II 节的指令可以运输。

货物运输应遵守 IMDG CODE (Amdt. 39-18) 2018 版特殊规定 188 的要求, 该货物属于非限制货物。

包装应坚固足以避免在运输, 处理和堆放期间的机械损坏。选择合适的包装材料和包装设计, 要防止电池意外导电和端子腐蚀。

Section 15 Regulation information

法规信息

Law information

法律信息

《Dangerous Goods Regulations》

《危险物品规则》

《Recommendations on the Transport of Dangerous Goods Model Regulations》

《对危险货物运输的有关规定的建议》

《International Maritime Dangerous Goods》

《国际海运危险货物规则》

《Technical Instructions for the Safe Transport of Dangerous Goods》

《危险品安全运输技术指令》

《Classification and code of dangerous goods》

《危险货物分类和品名编号》

《Occupational Safety and Health Act》 (OSHA)

《职业安全卫生法》

《Toxic Substance Control Act》 (TSCA)

《有毒物质控制法》

《Consumer Product Safety Act》 (CPSA)

《消费产品安全法》

《Federal Environmental Pollution Control Act》 (FEPCA)

《联邦环境污染控制法》

《The Oil Pollution Act》 (OPA)

《石油污染法案》

《Superfund Amendments and Reauthorization Act Title III (302/311/312/313)》 (SARA)

《超级基金修正案和再授权法案III(302/311/312/313)》

《Resource Conservation and Recovery Act》 (RCRA)

《资源保护及恢复法案》

《Safety Drinking Water Act》 (CWA)

《安全饮用水法》

《California Proposition 65》

《加州 65 提案》

《Code of Federal Regulations》 (CFR)

《美国联邦法规》

In accordance with all Federal, State and local laws

根据所有联邦、州和地方法律。

Section 16 Other information

其他信息

This file is only effective to the Battery (model 606090) provided by commissioner (Guangdong CVATOP New Energy Technology Co., Ltd.) which manufactured by Guangdong CVATOP New Energy Technology Co., Ltd. The commissioner provides the composition information of batteries, and promises its integrity and accuracy. Users should read this file carefully, and use the batteries in correct method. Test Center of National Engineering Research Center of Advanced Energy Storage Materials Co., Ltd. doesn't assume responsibility for any damage or loss because of misuse of batteries.

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-- End of Report --