



Test Report issued under the responsibility of:



**TEST REPORT  
IEC 62133**

**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**

**Report Number .....** SHES140200065301

**Date of issue .....** 2014-04-24

**Total number of pages .....** 18 pages

**Applicant's name .....** GlobTek, Inc.

**Address .....** 186 Veterans Dr. Northvale, NJ 07647, USA

**Test specification:**

**Standard .....** IEC 62133: 2012 (Second Edition)

**Test procedure .....** CB Scheme

**Non-standard test method .....** N/A

**Test Report Form No. ....** IEC62133B

**Test Report Form(s) Originator .....** UL(Demko)

**Master TRF .....** Dated 2013-03

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**This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.**

**Test item description .....** Rechargeable Lithium ion Battery

**Trade Mark .....**



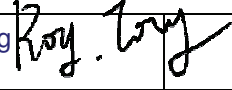

**Manufacturer .....** GlobTek, Inc.

186 Veterans Dr. Northvale, NJ 07647, USA

**Model/Type reference .....** BL2600C18654S1P\*\*\*\*\*

**Ratings .....** Rated Voltage: 14,8 V d.c.,

Rated Capacity: 2600 mAh, 38,48 Wh

<b>Testing procedure and testing location:</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
<b>Testing location/ address .....</b>		No. 588 West Jindu Rd, Xinqiao Town, Songjiang District 201612, Shanghai, China
<input type="checkbox"/>	<b>Associated CB Testing Laboratory:</b>	N/A
<b>Testing location/ address .....</b>		
<b>Tested by (name + signature) .....</b>		Roy Tong 
<b>Approved by (name + signature) .....</b>		Rocky Wang 
<input type="checkbox"/>	<b>Testing procedure: TMP</b>	N/A
<b>Testing location/ address .....</b>		
<b>Tested by (name + signature) .....</b>		
<b>Approved by (name + signature) .....</b>		
<input type="checkbox"/>	<b>Testing procedure: WMT</b>	N/A
<b>Testing location/ address .....</b>		
<b>Tested by (name + signature) .....</b>		
<b>Witnessed by (name + signature) .....</b>		
<b>Approved by (name + signature) .....</b>		
<input type="checkbox"/>	<b>Testing procedure: SMT</b>	N/A
<b>Testing location/ address .....</b>		
<b>Tested by (name + signature) .....</b>		
<b>Approved by (name + signature) .....</b>		
<b>Supervised by (name + signature) ..</b>		

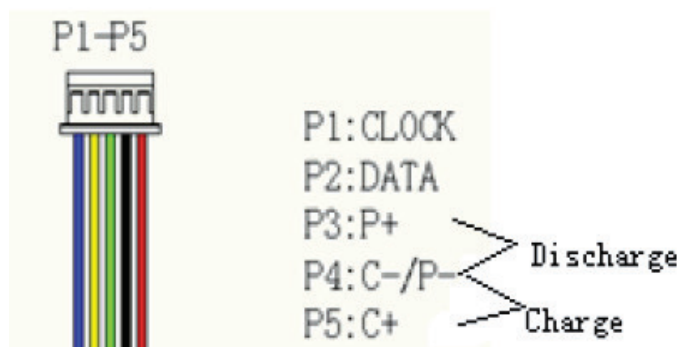
<p><b>List of Attachments:</b></p> <p>Attachment 1: 3 pages of Photos;</p> <p>Attachment 2: 2 pages of Information for safety;</p> <p>Attachment 3: 1 page of Packaging;</p> <p>Attachment 4: 3 pages of Product specification;</p> <p>Attachment 5: 2 pages of ISO 9001 certificate.</p>	
<p><b>Summary of testing:</b></p> <p>The sample(s) tested complies with the requirements of IEC 62133: 2012.</p> <p>These tests fulfil the requirements of standard ISO/IEC 17025.</p> <p>When determining the test conclusion, the Measurement Uncertainty of test has been considered.</p> <p><i>Remark:</i></p> <p>1. Only battery was considered and tested according to standard in this report as the cell (model: ICR18650-26++) was certified according to IEC 62133: 2012 by UL (Demko). (CB report No.: BA-13CA36829-A-1; CB cert. No.: DK-33809-UL).</p> <p>2. Clause 8.3.8 Transport tests were tested according to UN38.3 and complied.</p>	
<p><b>Tests performed (name of test and test clause):</b></p> <p><b>Specific requirements and tests (lithium systems)</b></p> <p><input checked="" type="checkbox"/> 5.2 Insulation resistance</p> <p><input type="checkbox"/> 8.2.1 Continuous charging at constant voltage (cells)</p> <p><input checked="" type="checkbox"/> 8.2.2 Moulded case stress at high ambient temperature (battery)</p> <p><input type="checkbox"/> 8.3.1 External short circuit (cell)</p> <p><input checked="" type="checkbox"/> 8.3.2 External short circuit (battery)</p> <p><input checked="" type="checkbox"/> 8.3.3 Free fall</p> <p><input type="checkbox"/> 8.3.4 Thermal abuse (cells)</p> <p><input type="checkbox"/> 8.3.5 Crush (cells)</p> <p><input checked="" type="checkbox"/> 8.3.6 Over-charging of battery</p> <p><input type="checkbox"/> 8.3.7 Forced discharge (cells)</p> <p><input checked="" type="checkbox"/> 8.3.8 Transport tests</p> <p><input type="checkbox"/> 8.3.9 Design evaluation – Forced internal short circuit (cells)</p>	<p><b>Testing location:</b></p> <p>--</p>
<p><b>Summary of compliance with National Differences</b></p> <p><b>List of countries addressed: none.</b></p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of EN 62133:2013.</p>	

**Copy of marking plate**

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Remark: 1. The details of connector as below:



2. "\*\*\*\*\*" of Model No. is A-Z, 0-9 code for marketing purpose. It refers to a specific type of polarized connector based on customer request.

<b>Test item particulars.....:</b>	
<b>Classification of installation and use.....:</b>	--
<b>Supply connection.....:</b>	--
<b>Recommend charging method declared by the manufacturer .....</b>	CC/CV
<b>Discharge current (0,2 I<sub>t</sub> A) .....</b>	0,52 A
<b>Specified final voltage .....</b>	12 V
<b>Chemistry .....</b>	<input type="checkbox"/> nickel systems ..... <input checked="" type="checkbox"/> lithium systems
<b>Recommend of charging limit for lithium system</b>	
<b>Upper limit charging voltage per cell.....:</b>	4,2 V
<b>Maximum charging current .....</b>	2,6 A (1,0C)
<b>Charging temperature upper limit .....</b>	45°C
<b>Charging temperature lower limit.....:</b>	0°C
<b>Polymer cell electrolyte type .....</b>	<input type="checkbox"/> gel polymer ..... <input type="checkbox"/> solid polymer
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object..... : N/A (Not applicable)	
- test object does meet the requirement..... : P (Pass)	
- test object does not meet the requirement..... : F (Fail)	
<b>Testing.....:</b>	
<b>Date of receipt of test item .....</b>	2014-03-10
<b>Date (s) of performance of tests .....</b>	2014-03-10 to 2014-03-26
<b>General remarks:</b>	
<p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p><b>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</b></p> <p>This document is issued by the Company subject to its General Conditions of Service, available on request or accessible at <a href="http://www.sgs.com/terms_and_conditions.htm">www.sgs.com/terms_and_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="http://www.sgs.com/terms_e-document.htm">www.sgs.com/terms_e-document.htm</a>.</p> <p>Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be produced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.</p>	

**Manufacturer's Declaration per sub-clause 4.2.5 of IEC60086-2:**

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....

- ☒ **Yes**  
☐ **Not applicable**

**When differences exist; they shall be identified in the General product information section.**

**Name and address of factory (ies) .....** : 1. GlobTek (Suzhou) Co., Ltd.  
Building 4, No. 76, Jinling East Road, Suzhou  
Industrial Park, Suzhou, 215021, Jiangsu, China

**General product information:**

Product description	Rechargeable Lithium ion Battery
Model of battery pack:	18650
Designation of battery:	4ICR19/65
Rated voltage	14,8 V d.c.
Rated capacity	2600 mAh
Maximum charge current	800 mA
End of voltage	12,0 Vd.c
Number of cells in battery pack	Four cells in series
Model of cell	ICR18650-26F
Designation of cell:	ICR19/65
Rated voltage of single cell	3,7 V d.c.
Rated capacity of single cell	2600 mAh
End of voltage	2,75 Vd.c

Please see Attachment 4 for more detailed product specification.

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4</b>	<b>Parameter measurement tolerances</b>		P
	Parameter measurement tolerances		P
<b>5</b>	<b>General safety considerations</b>		P
5.1	General		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 case.	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 creepage and clearance 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	A pressure relief mechanism used to relieve excessive inter pressure.	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief	Ditto.	P
5.4	Temperature/voltage/current management		P
	Batteries are designed such that abnormal temperature rise conditions are prevented	Protection circuit was used.	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	Ditto.	P
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that associated chargers are designed to maintain charging within the temperature, voltage and current limits specified	See Attachment 4 for detail.	P
5.5	Terminal contacts		P
	Terminals have a clear polarity marking on the external surface of the battery	External connector prevents reverse polarity connections.	P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		P

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		P
	Terminal contacts are arranged to minimize the risk of short circuits	The connector was recessed.	P
5.6	Assembly of cells into batteries		N/A
5.6.1	If there is more than one battery housed in a single battery case, cells used in the assembly of each battery have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer	Only one battery.	N/A
	Each battery has an independent control and protection		N/A
	Manufacturers of cells make recommendations about 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 separate circuitry to prevent the cell reversal caused by uneven discharges		N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application		N/A
	When testing a battery, the manufacturer of the battery provides a test report confirming the compliance according to this standard		N/A
5.6.2	Design recommendation for lithium systems only		P
	For the battery consisting of a single cell or a single cellblock: - Charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Clause 8.1.2, Table 4; or		N/A
	- Charging voltage of the cell does not exceed the different upper limit of the charging voltage determined through Clause 8.1.2, NOTE 1.		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - The voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Clause 8.1.2, Table 4, by monitoring the voltage of every single cell or the single cellblocks; or	The Max. charge voltage during charging is 4,23 V.	P



IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	- The voltages of any one of the single cells or single cellblocks does not exceed the different upper limit of the charging voltage, determined through Clause 8.1.2, NOTE 1, by monitoring the voltage of every single cell or the single cellblocks		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - Charging is stopped when the upper limit of the charging voltage, specified in Clause 8.1.2, Table 4, is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks; or	The Max. charge voltage during charging is 4,23 V.	P
	- Charging is stopped when the upper limit of the different charging voltage, determined through Clause 8.1.2, NOTE 1, 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
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	ISO 9001 certificate was submitted. See Attachment 5 for details.	P
<b>6</b>	<b>Type test conditions</b>		P
	Tests were made with the number of cells or batteries specified in Table 1 for nickel-cadmium and nickel-metal hydride systems and Table 2 for lithium systems, using cells or batteries that are not more than six months old	Tests are performed according to specified in table 2 of the standard. The cell samples are not more than 6 months old (all of them were produced at 2014-03) See marking plate.	P
	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.	The tests are conducted in an ambient of 20°C ± 5°C.	P
<b>7</b>	<b>Specific requirements and tests (nickel systems)</b>		N/A
7.1	Charging procedure for test purposes	Lithium systems.	N/A
7.2	Intended use		N/A
7.2.1	Continuous low-rate charging (cells)		N/A
	Results: No fire. No explosion		N/A
7.2.2	Vibration		N/A
	Results: No fire. No explosion. No leakage		N/A
7.2.3	Moulded case stress at high ambient temperature		N/A
	Oven temperature (°C) ..... : --		—

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No physical distortion of the battery casing resulting in exposure if internal components		N/A
7.2.4	Temperature cycling		N/A
	Results: No fire. No explosion. No leakage.		N/A
7.3	Reasonably foreseeable misuse		N/A
7.3.1	Incorrect installation cell		N/A
	The test was carried out using: - Four fully charged cells of the same brand, type, size and age connected in series, with one of them reversed; or		N/A
	- A stabilized dc power supply.		N/A
	Results: No fire. No explosion..... :		N/A
7.3.2	External short circuit		N/A
	The cells or batteries were tested until one of the following occurred: - 24 hours elapsed; or		N/A
	- The case temperature declined by 20% of the maximum temperature rise		N/A
	Results: No fire. No explosion..... :		N/A
7.3.3	Free fall		N/A
	Results: No fire. No explosion.		N/A
7.3.4	Mechanical shock (crash hazard)		N/A
	Results: No fire. No explosion. No leakage.		N/A
7.3.5	Thermal abuse		N/A
	Oven temperature ( °C) ..... : --		—
	Results: No fire. No explosion.		N/A
7.3.6	Crushing of cells		N/A
	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or		N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	The cell is prismatic type and a second set of samples was tested, rotated 90° around longitudinal axis compared to the first set		N/A
	Results: No fire. No explosion..... :		N/A
7.3.7	Low pressure		N/A
	Chamber pressure (kPa) ..... : --		—
	Results: No fire. No explosion. No leakage.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
7.3.8	Overcharge		N/A
	Results: No fire. No explosion..... :		N/A
7.3.9	Forced discharge		N/A
	Results: No fire. No explosion..... :		N/A
<b>8</b>	<b>Specific requirements and tests (lithium systems)</b>		<b>P</b>
8.1	Charging procedures for test purposes		P
8.1.1	First procedure: This charging procedure applied to tests other than those specified in 8.1.2		P
8.1.2	Second procedure: This charging procedure applied to the tests of 8.3.1, 8.3.2, 8.3.4, 8.3.5, and 8.3.9		P
	If a cell's specified upper and/or lower charging temperature exceeds values for the upper and/or lower limit test temperatures of Table 4, the cells were charged at the specified values plus 5 °C for the upper limit and minus 5 °C for the lower limit	The upper charging temperature is 45 °C and the lower charging temperature is 0 °C in specification.	P
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1) .....	See the test result.	P
	For a different upper limit charging voltage (i.e. other than for lithium cobalt oxide systems at 4,25 V), the applied upper limit charging voltage and upper limit charging temperatures were adjusted accordingly	Lithium cobalt oxide systems The upper limit charging voltage is 4,25 V during test.	N/A
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1) .....	--	N/A
8.2	Intended use		P
8.2.1	Continuous charging at constant voltage (cells)	Cell was certified according to IEC 62133: 2012	N/A
	Results: No fire. No explosion..... :	--	N/A
8.2.2	Moulded case stress at high ambient temperature (battery)		P
	Oven temperature ( °C) .....	70 °C	—
	Results: No physical distortion of the battery casing resulting in exposure of internal components		P
8.3	Reasonably foreseeable misuse		P
8.3.1	External short circuit (cell)	Cell was certified according to IEC 62133: 2012	N/A
	The cells were tested until one of the following occurred: - 24 hours elapsed; or		N/A

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	- The case temperature declined by 20% of the maximum temperature rise		N/A
	Results: No fire. No explosion..... :	--	N/A
8.3.2	External short circuit (battery)		P
	The cells were tested until one of the following occurred: - 24 hours elapsed; or		P
	- 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		P
	Results: No fire. No explosion..... :	See Table 8.3.2	P
8.3.3	Free fall		P
	Results: No fire. No explosion.		P
8.3.4	Thermal abuse (cells)	Cell was certified according to IEC 62133: 2012	N/A
	The cells were held at 130°C ± 2°C for: - 10 minutes; or		N/A
	- 30 minutes for large cells (gross mass of more than 500 g as defined in IEC 62281)		N/A
	Oven temperature (°C) .....		—
	Gross mass of cell (g) .....		—
	Results: No fire. No explosion.		N/A
8.3.5	Crush (cells)	Cell was certified according to IEC 62133: 2012	N/A
	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or		N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained; or		N/A
	- 10% of deformation has occurred compared to the initial dimension		N/A
	Results: No fire. No explosion..... :	--	N/A
8.3.6	Over-charging of battery		P
	Test was continued until the temperature of the outer casing: - Reached steady state conditions (less than 10°C change in 30-minute period); or		P
	- Returned to ambient		N/A

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire. No explosion..... :	See Table 8.3.6	P
8.3.7	Forced discharge (cells)	Cell was certified according to IEC 62133: 2012	N/A
	Results: No fire. No explosion..... :	--	N/A
8.3.8	Transport tests		P
	Manufacturer's documentation provided to show compliance with UN Recommendations on Transport of Dangerous Goods	Transport tests were tested according to UN38.3 and complied.	P
8.3.9	Design evaluation – Forced internal short circuit (cells)	Cell was certified according to IEC 62133: 2012	N/A
	The cells complied with national requirement for ..... :		—
	The pressing was stopped upon: - 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
<b>9</b>	<b>Information for safety</b>		P
	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.	See Attachment 2 for detail.	P
	The manufacturer of batteries ensures that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards.		P
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		P
	As appropriate, information relating to hazard avoidance resulting from a system analysis is provided to the end user ..... :	Not for end user.	N/A
<b>10</b>	<b>Marking</b>		P
10.1	Cell marking		N/A
	Cells marked as specified in the applicable cell standards: IEC 61951-1, IEC 61951-2 or IEC 61960.	Only battery will be marked.	N/A
10.2	Battery marking	See the marking plate.	P
	Batteries marked in accordance with the requirements for the cells from which they are assembled.		P

IEC 62133			
Clause	Requirement + Test	Result - Remark	Verdict
	Batteries marked with an appropriate caution statement.		P
10.3	Other information		P
	Storage and disposal instructions marked on or supplied with the battery.	See Attachment 2 for detail.	P
	Recommended charging instructions marked on or supplied with the battery.	See Attachment 4 for detail.	P

<b>11</b>	<b>Packaging</b>		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.	See Attachment 3 for detail.	P

<b>Annex A</b>	<b>Charging range of secondary lithium ion cells for safe use</b>		N/A
A.1	General	Battery Pack	N/A
A.2	Safety of lithium-ion secondary battery		N/A
A.3	Consideration on charging voltage		N/A
A.3.1	General		N/A
A.3.2	Upper limit charging voltage		N/A
A.3.2.1	General		N/A
A.3.2.2	Explanation of safety viewpoint		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied		N/A
A.4	Consideration of temperature and charging current		N/A
A.4.1	General		N/A
A.4.2	Recommended temperature range		N/A
A.4.2.1	General		N/A
A.4.2.2	Safety consideration when a different recommended temperature range is applied		N/A
A.4.3	High temperature range		N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A
A.4.3.3	Safety considerations when specifying charging conditions in high temperature range		N/A
A.4.3.4	Safety consideration when specifying new upper limit in high temperature range		N/A
A.4.4	Low temperature range		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
A.4.4.1	General		N/A
A.4.4.2	Explanation of safety viewpoint		N/A
A.4.4.3	Safety considerations, when specifying charging conditions in low temperature range		N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		N/A
A.4.5	Scope of the application of charging current		N/A
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
	The insertion procedure carried out at 20 °C±5 °C and under -25 °C of dew point		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 to cylindrical cell		N/A
A.5.5.1	Insertion of nickel particle to winding core		N/A
A.5.5.2	Mark the position of nickel particle on the both end of winding core of the separator		N/A
A.5.6	Insertion of nickel particle to prismatic cell		N/A

TABLE: Critical components information					P
Object/part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
Cell	SAMSUNG	ICR18650-26F	Rated Voltage: 3,7 Vd.c., Rated Capacity: 2600 mAh	IEC 62133: 2012 EN 62133: 2013	UL (Demko). (CB report No.: BA-13CA36829-A-1; CB cert. No.: DK-33809-UL)
PCB	Globtek Inc	ZM-18650-4S	6*65*71mm	--	--
Control IC (U1)	TI	BQ3060PWR	--	--	--
MOSFET (Q1,Q2)	AOS	A04407A	--	--	--
Fuse (F1)	TAM	T6D	--	UL60691	UL (E73591)
NTC (RT2)	Joinset	10K $\Omega$	--	--	UL (E258805)
Resistance (R10)	GCT	10m $\Omega$ , 2W	--	--	--
Lead wire	Dongguan Taiyu Wire Co., Ltd	3239	105°C, 24AWG	--	UL (E215834)
<b>Supplementary information:</b> <sup>1)</sup> Provided evidence ensures the agreed level of compliance. See OD-CB2039.					



7.2.1	TABLE: Continuous low rate charge (cells)					N/A
7.2.2	TABLE: Vibration					N/A
7.3.1	TABLE: Incorrect installation (cells)					N/A
7.3.2	TABLE: External short circuit					N/A
7.3.6	TABLE: Crush					N/A
7.3.8	TABLE: Overcharge					N/A
7.3.9	TABLE: Forced discharge (cells)					N/A
8.2.1	TABLE: Continuous charging at constant voltage (cells)					N/A
8.3.1	TABLE: External short circuit (cell)					N/A
8.3.2	TABLE: External short circuit (battery)					P
Model		Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (Ω)	Maximum case temperature rise ΔT, (°C)	Results
Samples charged at charging temperature upper limit						
BL2600C18654S1P* **** (#19)		55,3	16,301	0,080	Shut down immediately Tested for 24 h	Pass
BL2600C18654S1P* **** (#20)		55,3	16,257	0,080		Pass
BL2600C18654S1P* **** (#21)		55,3	16,255	0,080		Pass
BL2600C18654S1P* **** (#22)		55,3	16,253	0,080		Pass
BL2600C18654S1P* **** (#23)		55,3	16,256	0,080		Pass
Samples charged at charging temperature lower limit						
BL2600C18654S1P* **** (#24)		56,1	16,183	0,080	Shut down immediately Tested for 24 h.	Pass
BL2600C18654S1P* **** (#25)		56,1	16,200	0,080		Pass
BL2600C18654S1P* **** (#26)		56,1	16,205	0,080		Pass
BL2600C18654S1P* **** (#27)		56,1	16,211	0,080		Pass
BL2600C18654S1P* **** (#28)		56,1	16,214	0,080		Pass

**Supplementary information:**

- No fire or explosion

8.3.5	TABLE: Crush	N/A
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8.3.6	TABLE: Over-charging of battery	P
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Constant charging current (A) .....	1,4	—
Supply voltage (Vdc) .....	20	—

Model	OCV before charging, (Vdc)	Resistance of circuit, ( $\Omega$ )	Maximum outer casing temperature, ( $^{\circ}\text{C}$ )	Results
BL2600C18654S1P***** (#55)	13,774	--	26,0	Pass
BL2600C18654S1P***** (#56)	13,786	--	27,0	Pass
BL2600C18654S1P***** (#57)	13,748	--	27,3	Pass
BL2600C18654S1P***** (#58)	13,735	--	26,8	Pass
BL2600C18654S1P***** (#59)	13,785	--	26,8	Pass

**Supplementary information:**

- No fire or explosion

Remark: Because the design of protective circuit, the Max. charge current is 1,4 A.

8.3.7	TABLE: Forced discharge (cells)	N/A
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8.3.9	TABLE: Forced internal short circuit (cells)	N/A
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---End report ---

**Attachment 2 Information for safety****5. DANGERS(危险):**

- ★ Don't disassemble or modify the battery. 禁止重组和改装电池  
The battery has safety function and protection circuit to avoid the danger. If they damage ,electrolyte leakage, short-circuit between positive and negative tabs, etc. It would cause the generation, smoke,rupture, or flaming with mishandling.  
电池自带的保护电路会避免危险。不当操作会导致电解液渗漏、正负极片短路等损害，引起电池冒火星、冒烟、破裂或起火。
- ★ Don't incinerate or heat the battery. 禁止燃烧或加热电池  
Don't use or leave battery nearby fire, stove or heated place .These occur the melting of insulator, damage of safety function, or ignition on electrolyte. In case that separator made of polymer is melted by high temperature, the internal short-circuit occurs in individual cells and then it would cause the generating, smoke, rupture or flaming.  
禁止把电池放置在靠近火源或高温的环境中。否则会导致绝缘层融化、安全性能破坏或电解液起火。聚合物隔膜在高温环境下会融化而导致电芯内部短路，引起电池冒火星、冒烟、破裂或起火。
- ★ Don't use any damage battery. 禁止使用任何破损的电池  
Don't use the battery that are dented or bent on their edge part. South river batteries are possible to be damaged by strong mechanical shock and it would cause wire break, short-circuit inside the cell,leakage of electrolyte, etc.  
禁止使用压伤或边缘弯曲的电池。本公司电池可能因过强的机械冲击而损坏，导致线路断裂、电池内部短路、漏液等。
- ★ Don't give battery impact or fling it. 禁止抛掷电池  
If the protection circuit assembled in the battery is broken, the battery will be charge at abnormal voltage or current and abnormal chemical reaction will occur.  
It may cause the generating, smoke, rupture or flaming.  
若电池内部保护电路破坏，电池会在异常电压或电流下充电而出现不良反应如冒火星、冒烟、破裂或起火。
- ★ Don't use battery nearby the high temperature place or under blazing sun.  
禁止在高温或烈日环境下使用电池  
South batteries have possibility to be degraded its performance such as capacity, thickness increase, impendence, etc. The thickness change may lead to stressing on battery case/device, wiring or cell which may have possibility to lead to damage performance.  
电池会出现容量、厚度、内阻等性能的变化。厚度增加会增加电池外壳、导线或电芯压力增加，引起电性能的损害。
- ★ Don't connect battery to the plug socket or car-ciqarett-plug  
禁止把电池直接连到电源插座或车载插座上  
Added high voltage to the battery, if the protection circuit assembled in the battery is broken, the excessive current will flow in it and cause the generating, swelling, smoke, rupture or flaming.  
过高电压会导致电池内部保护电路破裂，过大电流进入电池，而导致电池冒火星、膨胀、冒烟、破裂或起火。

## **Attachment 2 Information for safety**

- ★ Don't touch a leaked battery directly. 禁止直接接触漏液的电池  
In case the leaked electrolyte gets into eyes, wash them with fresh water as soon as soon as possible without rubbing eyes. And then, see a doctor immediately.  
If leave damaged eyes undone, it will cause eye-trouble.  
若泄露的电解液不慎入眼, 不要揉搓眼睛, 立即用清水冲洗并去医院检查。  
如不注意, 会引起眼睛伤害。

### **6. WARNINGS (警告):**

- ★ Keep the battery away from baby.  
电池远离婴儿放置
- ★ Don't get into a microwave or high pressure container.  
禁止把电池放进微波炉或高压容器中
- ★ Don't use a leaked battery nearby fire.  
禁止在火源附近使用漏液的电池
- ★ Don't use an abnormal battery, such as leakage, swelling, deformation, etc.  
禁止使用异常的电池, 如泄露、膨胀、变形等。

### **7. Others(其他)**

- 7.1 Disassembly may cause an internal short circuit to the cell, which may cause out-gassing, fire, or other problems.  
不当重组电池会导致电池内部短路而引发胀气、起火或其他问题。
- 7.2 Never incinerate or dispose of the cells in a fire as this may cause the cells to catch fire.  
禁止将使用后的电池投入火中, 可能会导致电池起火。
- 7.3 The cells should never be exposed to liquids such as water, drinks or oil.  
禁止将电芯裸露在水、饮料、油等液体中。
- 7.4 Do not mix the cells from different manufacturers in a common pack.  
禁止将不同厂家生产的电芯组装在同一个电池组中。

- ▲ **Special Notice: If the cell isn't used for a long time, please keep the cells in a half-charged state neither fully charged nor completely discharged. Recharge the cells and use half of the power after 2-3 months. Store the cells in a cool and dry place. It will protect the cell from damage.**

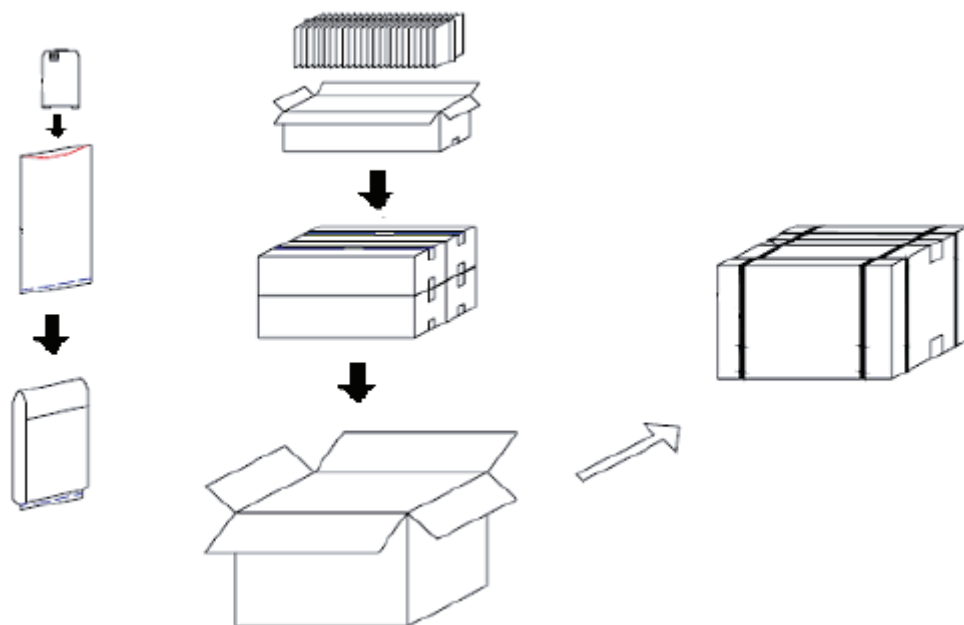
- ▲ **特别提醒: 如果电池长时间不使用, 请将电量保持在额定容量的一半存放, 不要充满或完全放电。定期充电并在2-3个月后用掉一半的电量。置于凉爽、干燥的环境中储存能防止电池损坏。**

### **8. Correct Disposal of this product (正确处理本产品)**

Do not throw this product into the trash when discarding. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources.

不要将本产品随意丢弃至垃圾中。为了防止有可能因为没有控制的废物处理导致的环境污染和对人类健康的损害, 有责任回收利用本品来促进物质资源的可持续使用。

\*\*\*\*\*End of Attachment 2\*\*\*\*\*

**Attachment 4 Packaging**

**Remark: Packagings number (包装数量): 24pcs/箱**

--- End of Attachment 3 ---



**Attachment 4 Specifications****1.Specification for battery pack:**

3、 Specification (规格) :			
No.	Item项目	Spec.规格	Note备注
1	Charge Voltage 充电电压	19~27 V	
2	Nominal Voltage 标称电压	14.8 V	Battery Voltage between 14.8 V~ 15.6 V before shipping. 电池出货前电压范围 14.8 V~ 15.6 V.
3	Nominal Capacity 标称容量	2600 mAh with 0.2 C Discharge	Nominal Capacity refer to the capacity of 0.2 C discharge with 12.0 V cut-off,after charging with standard method. 标称容量是指电池标准充电之后以 0.2 C的倍率放电到 12.0 V截止的容量均值。
4	Min Capacity 最小容量	2600 mAh with 0.2 C Discharge	Min Capacity refer to the capacity of 0.2 C discharge with 12.0 V cut-off,after charging with standard method. 最小容量是指电池标准充电之后以 0.2 C 倍率放电到 12.0 V截止的容量均值。
5	Standard Charge method 标准充电方法	0.2 C charging	0.2 C CC charge to 19~27 V ,then CV charge till charge decline to $\leq 0.02C$ 0.2 C恒流充电到 19~27 V, 恒压充电到电流小于0.02C
6	Charging time 充电时间	6 hours reference	Base on standard charge method 根据标准充电方法充电
7	Max charge current 最大充电电流	0.8 A	To continue to charging 持续充电
8	Max discharge current 最大放电电流	2 A	To continue to discharging 持续放电
9	Discharge protel Volatge 放电保护电压	2.8 V	While continue discharging the PCM protel 在持续放电的过程中保护板发生保护
10	Discharge cut-end voltage 放电终止电压	12.0 V	Capacity test discharge to the voltage 容量测试时的放电电压
11	Self-discharge 自放电	Residual capacity > 85 %	After standard charging, storied at 25°C $\pm$ 5°C for 28 days, then measure the capacity as Item 3. 电池标准充电之后储存在25 $\pm$ 5°C的条件下28天, 然后测试按照第三项方法测试电池容量。
12	Cycle life 循环寿命	> 300 Times	One cycle include one charging period and one discharging period.Test condition: Charge:0.2C to 19~27 V Discharge: 0.2C to 12.0 V The cycle life is the cycle times when the dis-charge capacity is about 80% of the standard capacity. 一个循环包含一个充电过程加一个放电过程。测试方法: 0.2C充电到 19~27 V 0.2C放电到 12.0 V 循环寿命指电池放电容量大于初始容量80%前所走的次数。
13	Impedance 内阻	< 250 m $\Omega$	After Standard charging, measure the internal resistance with AC1KHz (while measuring,clip near 2/3 place of the anode and the cathode). 标准充电之后用AC1KHZ的内阻测试仪测试电池内阻 (内阻测试过程保持电池荷电约为总容量的2/3)

### Attachment 4 Specifications

14	Operating Temperature 工作温度	Discharge: -20℃~55℃ Charge: 0℃~45℃	Battery must be stored at 14.8 V~ 15.6 V. Long storage periods cells should be cycled every 90 days. The method is to do a charge-discharge cycle with standard method, then charge to 14.8 V~ 15.6 V. 电池必须储存在 14.8 V~ 15.6 V 电池长时间储存每90天需要循环一次，具体方法是进行一次充电-放电然后回充到 14.8 V~ 15.6 V 之间。
15	Battery weight 电池重量	approx 198 g	The weight only as a reference 重量仅作为参考

**Attachment 5 ISO9001 Certificate**

**QUALITY MANAGEMENT SYSTEM  
CERTIFICATE**

Certificate No.: 00112Q25411R1M/3200

We hereby certify that  
**GlobTek (Suzhou) Co., Ltd.**

Building 4&6, No.76 Jinling East Road, Suzhou Industrial Park, Suzhou City, Jiangsu Province,  
P.R.China

by reason of its  
**Quality Management System**  
has been awarded this certificate for compliance with the standard  
**ISO9001: 2008**  
**GB/T 19001-2008**  
The Quality Management System Applies in the following area:  
**Design and Manufacture of Power Supplies**

Certified since: Jun. 01, 2009    Valid from: Jun. 11, 2012    Valid until: Jun. 10, 2015

After a surveillance cycle, the certificate is valid only when used together with an Acceptance Notice of Surveillance Audit issued by CQC.  
Please access [www.cqc.com.cn](http://www.cqc.com.cn) for checking validity of the certificate.



Signed by: Wang Kejiao

**CHINA QUALITY CERTIFICATION CENTRE**  
Section 9, No.188, Nansihuan(the South Fourth Ring Road) Xilu(West Road), Beijing 100070,China  
<http://www.cqc.com.cn>

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Attachment 5 ISO9001 Certificate

**QUALITY MANAGEMENT SYSTEM  
CERTIFICATE**

Certificate No.: 00111Q23403R0M/4400

We hereby certify that  
**CTE Energy Co.,Ltd**

Elite Industrial Zone Da Ling Shan Town Dong Guan, Guang Dong, China

by reason of its  
**Quality Management System**  
has been awarded this certificate for compliance with the standard  
**ISO9001: 2008**  
**GB/T 19001-2008**  
The Quality Management System Applies in the following area:  
**Development and Production of Lithium Ion Battery used for Electronic Products.**

Certified since: May. 09, 2011    Valid from: Sep. 04, 2013    Valid until: May. 08, 2014

After a surveillance cycle, the certificate is valid only when used together with an Acceptance Notice of Surveillance Audit issued by CQC.  
Please access [www.cqc.com.cn](http://www.cqc.com.cn) for checking validity of the certificate.



**CHINA QUALITY CERTIFICATION CENTRE**  
Section 9, No.188, Nansihuan(the South Fourth Ring Road) Xilu(West Road), Beijing 100070,China  
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- - - End of Attachment 5 - - -