

TEST REPORT

**Ministerial Ordinance For Determining Technical Standards For Electrical Appliances
(Lithium Ion Secondary Batteries)
Attached -Table 9 Lithium ion secondary batteries**

Report Reference No.	SHES210300411901
Date of issue	2021-03-17
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Testing Laboratory	SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Address	588 West Jindu Road, Xinqiao Songjiang, 201612 Shanghai, China
Applicant's name	Hengdian Group DMEGC Magnetics Co., Ltd.
Address	Hengdian Industrial Zone, Dongyang, Jinhua, Zhejiang, China
Test specification:	
Standard	Ministerial Ordinance For Determining Technical Standards For Electrical Appliances Attached-Table 9 Lithium ion secondary batteries
Test procedure	SGS-CSTC
Non-standard test method	N/A
Test Report Form No.	EEC_ Ordinance_Table 9_Batt A
Test Report Form(s) Originator	SGS-CSTC
Master TRF	Dated 2021-01
Test item description	Rechargeable Li-ion Cell
Trade Mark	DMEGC
Manufacturer	Same as applicant
Model/Type reference	See page 6
Ratings	See page 6



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Testing Center E&E, Songjiang District, Shanghai

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Testing procedure and testing location:	
<input checked="" type="checkbox"/> Testing Laboratory:	SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing location/ address	588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
Tested by (name + signature).....	Vivian
Approved by (+ signature)	Eric
<input type="checkbox"/> Testing procedure: TMP	N/A
Tested by (name + signature).....	
Approved by (+ signature)	
Testing location/ address	
<input type="checkbox"/> Testing procedure: WMT	N/A
Tested by (name + signature).....	
Witnessed by (+ signature).....	
Approved by (+ signature)	
Testing location/ address	
<input type="checkbox"/> Testing procedure: SMT	N/A
Tested by (name + signature).....	
Approved by (+ signature)	
Supervised by (+ signature).....	
Testing location/ address	
<input type="checkbox"/> Testing procedure: RMT	N/A
Tested by (name + signature).....	
Approved by (+ signature)	
Supervised by (+ signature).....	
Testing location/ address	



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 Testing Center E&C, Songjiang District

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Summary of testing:

The sample(s) tested complies with the requirements of Ministerial Ordinance For Determining Technical Standards For Electrical Appliances

Attached-Table 9 Lithium ion secondary batteries

These tests fulfil the requirements of standard ISO/IEC 17025.

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

Remark: Cell was considered and tested according to standard in this report.

Full tests were conducted on both cell models INR18650-29E, INR18650-29EA.

Tests performed (name of test and test clause):

- Continuous charging at constant voltage
- Vibration
- Battery enclosure test at high ambient temperature
- Temperature cycling
- External short circuit
- Free fall
- Mechanical shock (crash hazard)
- Thermal abuse
- Crushing of cells
- Low pressure
- Overcharge (the test cell with protective device)
- Forced discharge
- Cell protection against a high charging rate
- Forced internal short circuit of cells
- Function of the overcharge protection of batteries
- Free fall of appliance

Testing location:

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 588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

For forced internal short circuit of cells

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
 No.2, Jianghao Industrial Factory Area, No.430, Jihua Road, Bantian Street, Longgang District, Shenzhen, Guangdong, China

Summary of compliance with National Differences:

N/A



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 Inspection & Testing Services
 Testing Center E&E, Safety & Security


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Copy of marking plate and photos of samples

Rechargeable Li-ion Cell
 Model: INR18650-29E (INR19/66)
 + 3.7V 2900mAh 10.73Wh -
 Do not disassemble, crush, puncture.
 Do not dispose of in fire or water.
 Date code: YYYYMMDD
 Manufacturer: Hengdian Group DMEGC Magnetics Co., Ltd.



Li-ion 20

Rechargeable Li-ion Cell
 Model: INR18650-29EA (INR19/66)
 + 3.6V 2900mAh 10.44Wh -
 Do not disassemble, crush, puncture.
 Do not dispose of in fire or water.
 Date code: YYYYMMDD
 Manufacturer: Hengdian Group DMEGC Magnetics Co., Ltd.



Li-ion 20

Remark:

Date code: YYYY for year, MM for month, DD for day.



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Particulars: test item vs. test requirements	
Battery or battery pack	--
Standard charge current.....:	--
Standard discharge current.....:	--
Maximum discharge current.....:	--
Cut off Voltage of charge.....:	4,25 V
Cut off Voltage of discharge.....:	2,7 V
Cell model and Manufacturer.....:	INR18650-29EA, INR18650-29E, Same as applicant
Protection Devices model and Manufacturer	--
Possible test case verdicts:	
- 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)
Testing.....:	
Date of receipt of test item.....:	2021-03-09
Date (s) of performance of tests.....:	2021-02-10 to 2020-03-16
General remarks:	
The test results presented in this report relate only to the object tested.	
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"(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.	
Name and address of factory (ies).....: Same as applicant	



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General product information:

Product description:	Rechargeable Li-ion Cell	
Model of cell:	INR18650-29EA	INR18650-29E
Designation of cell:	INR19/66	INR19/66
Rated voltage:	3,6 V	3,7 V
Rated capacity:	2900 mAh	2900 mAh
Maximum charge current:	5800 mA	5800 mA
Discharge current (0,2C):	580 mA	580 mA



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1	Basic design		
(1)	Insulation and wiring		P
	a) The insulation resistance between the positive terminal and a metal surface (excluding electrical contact surfaces and electrical parts having the same potential as the electrode potential of the battery) exposed to outside the battery, and which, as mounted on the equipment, may be touched by a human, shall be 5 MΩ or more at 500 VDC.	No exposed metal enclosure	N/A
	b) Internal wiring and its insulation shall sufficiently withstand anticipated maximum current, maximum voltage, and maximum temperature.		P
	c) Equipment having connection terminals shall be wired to maintain an appropriate clearance and creepage distance between terminals.		P
(2)	Inner pressure reduction mechanism		
	a) Battery cases and cells shall be designed with a gas release mechanism, or shall be designed to reduce excessive internal pressure when the equipment reaches a value or rate set so as to protect against explosion or fire.		P
	b) If support material is used to fix cells within the battery case, the type of support material and method of fixing cells shall not inhibit pressure relief, and the battery shall not induce overheating during normal use of the battery.		
(3)	Temperature or/and current management		
	The battery shall be designed so that abnormal temperature-rise conditions are prevented. Provided that this does not apply if a current limiter is installed outside the battery to control abnormal temperature-rise during charging and discharging within a safety level.	Protection circuit was used	P
(4)	Terminal contacts		
	a) The battery shall be marked positive (+) or negative (-) for terminals on its external surface or be designed with no fear of misconnection.		
	b) Batteries having a terminal contact plate shall be sized and shaped to ensure the flow of maximum current anticipated.		P
	c) Batteries having a terminal contact plate shall be designed so that the surface of the terminal contact plate will be a conductive material with good mechanical strength and corrosion resistance. Moreover, the terminal contact plate shall be arranged to minimize the risk of short circuits.		
(5)	Assembly of cells into a battery		P



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	Batteries made of series connected cell blocks shall be designed so that cells are assembled to make the cell blocks the same capacity, and cell polarity reversal is prevented. Provided that this does not apply to the battery controlled by itself or the equipment as cell polarity reversal is prevented.		
2	Intended use		
	In the tests mentioned below, the number and test ambient temperature of cells or batteries to be tested shall be as per Annex Table 1-1. Provided that these tests can be handled by using an equivalent or severer test method. Moreover, if the battery structure has been partially modified and the test results before the change can be used instead, no further tests are required on that particular part.		P
(1)	Continuous charging at constant voltage		
	Cells charged under the conditions specified in Annex Table 1-2 (hereafter called "the charged cells") shall be charged at constant voltage for 28 days.		P
	Acceptance criteria: no fire, no explosion, no leakage	See appended table A	
(2)	Vibration		
	Cells and batteries charged under the conditions specified in Annex Table 1-2 (hereafter called "the charged cells and batteries") shall be tested under the following test conditions: a) A simple harmonic motion with an amplitude of 0.76 mm and a total maximum excursion of 1.52 mm shall be applied to the charged cells; b) The frequency shall be increased at a rate of 1 Hz/minute from 10 Hz and reduced at a rate of 1 Hz/minute after it reaches 55 Hz, and then it shall be ensured that the frequency has reached 10 Hz; c) The entire range of frequency (10 Hz to 55 Hz) shall be tested for 90 ± 5 minutes in each of the three mutually perpendicular directions of vibration (X, Y, and Z axes); d) The vibration shall be applied in each of mutually perpendicular direction (X, Y, an Z axes) according to conditions a) to c); e) Store the samples for 1 hour.		P
	Acceptance criteria: no fire, no explosion, no leakage	See appended table B	
(3)	Battery enclosure test at high ambient temperature		
	A battery charged under conditions specified in Annex Table 1-2 (hereafter called "the charged batteries") shall be left in an air circulating oven at 70 ± 2°C for 7 hours. Then the battery shall be removed from the air circulating oven and the temperature of the battery case shall be returned back to 20 ± 5°C.		N/A



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	<p>Acceptance criteria: The case shall not undergo deformation that exposes the internal contents</p>	<p>See appended table C</p>	
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(4)	Temperature cycling		
	<p>Charged cells or batteries shall be left in a thermostatic oven, and the test procedure shall be as follows:</p> <p>a) Leave the samples at $75 \pm 2^{\circ}\text{C}$ for 4 hours;</p> <p>b) Change the temperature to $20 \pm 5^{\circ}\text{C}$ within 30 minutes and left the equipment for at least 2 hours.</p> <p>c) Change the temperature to $-20 \pm 2^{\circ}\text{C}$ within 30 minutes and left the equipment for at least 4 hours;</p> <p>d) Change the temperature to $20 \pm 5^{\circ}\text{C}$ within 30 minutes and left the equipment for at least 2 hours;</p> <p>e) Step a) to d) repeat another 4 times;</p> <p>f) Store the samples at $20 \pm 5^{\circ}\text{C}$ for 7 days.</p>		P
	Acceptance criteria: no fire, no explosion, no leakage	See appended table D	
3	Reasonably foreseeable misuse		
	<p>In tests specified below, the number and test ambient temperature of cells or batteries to be tested shall be as per Annex Table 1-1. Provided that these tests can be conducted by using an equivalent or severer test method. Moreover, if the battery structure has been partially modified and the test results before the change can be used instead, no further tests are required on that particular part.</p>		P
(1)	External short circuit		
	<p>a) The charged cell shall be left at an ambient temperature of $55 \pm 5^{\circ}\text{C}$. With the positive and negative terminals short-circuited via connection to a total external resistance of $80 \pm 20 \text{ m}\Omega$, the battery shall be left for 24 hours or until the difference between the surface temperature of the charged cell and the ambient temperature becomes not more than 20% of the maximum difference (whichever is the sooner).</p>		
	<p>b) The charged battery shall be left at an ambient temperature of $20 \pm 5^{\circ}\text{C}$. With the positive and negative terminals short-circuited via connection to a total external resistance of $80 \pm 20 \text{ m}\Omega$, the battery shall be left for 24 hours or until the difference between the temperature of the battery container and the ambient temperature becomes not more than 20% of the maximum difference (whichever is the sooner; if the battery incorporates a protective device or protective circuit and the current has stopped, then for one hour after the current stopped).</p>		P
	Acceptance criteria: no fire, no explosion	See appended table E	
(2)	Free fall		P



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	Drop the charged cell or battery three times from a level of 1,000 mm onto a concrete floor in a random direction. Provided that this does not apply to charged batteries weighing more than 7 kg.		
	Acceptance criteria: no fire, no explosion	See appended table F	



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(3)	Mechanical shock (crash hazard)		P
	<p>Charged cells and batteries shall be tested under the following test conditions:</p> <p>a) Secure the samples onto an impact testing machine by means of a rigid mount. Then shock of the equal magnitude shall be applied to the battery in each of three mutually perpendicular directions (X, Y, and Z axes);</p> <p>b) The shock applied to the sample shall be accelerated so that the minimum average acceleration will be 735 m/s² during the first 3 ms. The peak acceleration shall be between 1,226 m/s² and 1,716 m/s².</p> <p>Acceptance criteria: no fire, no explosion, no leakage</p>		
(4)	Thermal abuse		P
	<p>The charged cell at 20 ± 5°C shall be placed in a gravity or circulating air-convection oven. The oven temperature shall then be increased to 130 ± 2°C at a rate of 5 ± 2°C/min, and left for 10 minutes.</p> <p>Acceptance criteria: no fire, no explosion</p>		
(5)	Crushing of cells		P
	<p>The charged cells shall be tested under the following test conditions:</p> <p>a) A sample shall be placed between two flat surfaces and a force of 13 ± 1 kN shall be applied by a crushing apparatus;</p> <p>b) The force shall be released when any of the following occurs: the maximum force is applied, an abrupt voltage drop of one-third of the original voltage has been obtained, or there is 10% deformation of the battery height;</p> <p>c) The longitudinal axis of the cells shall be parallel with the flat surface of the crushing apparatus. For the prismatic cells, a similar test shall be performed by rotating a cell 90° around its longitudinal axis and it shall be ensured that force is applied to both the wide and narrow sides of the prismatic cells. At that time, one sample shall receive force in a single direction.</p> <p>Acceptance criteria: no fire, no explosion</p>		
(6)	Low pressure		P
	<p>A charged cell shall be placed in a vacuum chamber, the chamber shall be closed, and then the chamber shall be gradually reduced to a pressure equal to or less than 11.6 kPa, and left for 6 hours.</p> <p>Acceptance criteria: no fire, no explosion, no leakage</p>		



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(7)	Overcharge		P
	The cell discharged under the conditions specified in Annex Table 1-2 (including cells equipped with a protective device for use in equipment or batteries; hereafter called "the discharged cells") shall be provided. Then by using a power supply of not less than 10V, the battery shall be energized until it reaches 250% of the rated capacity or the test voltage with the designed charging current.		
	Acceptance criteria: no fire, no explosion	See appended table K	
(8)	Forced discharge		P
	A discharged cell is subjected to a reverse charge at 1 ItA for 90 min.		
	Acceptance criteria: no fire, no explosion	See appended table L	
(9)	Cell protection against a high charging rate		P
	The discharged cells shall be charged at a current three times the designed charging current, thereby fully charging it, or when a protective device used in the equipment or battery cuts off the charge current.		
	Acceptance criteria: no fire, no explosion	See appended table M	



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(10)	Forced internal short circuit of cells		
	<p>The test is carried out by the following procedure. Note that each test shall use a new sample.</p> <p>a) At an ambient temperature of $20 \pm 5^{\circ}\text{C}$ and the dew point of -25°C or below, the sample shall be dismantled and the winding-core shall be removed from the enclosure. Then a small L-shaped piece of metallic nickel (0.2-mm high by 0.1-mm wide, with each side 1-mm long) shall be inserted between the positive active material and negative active material as laid out in Table 2. If uncoated current collector of positive electrode is faced an active material coated negative electrode, said position shall be tested as well. Provided that, if inserting a small piece of metallic nickel as laid out in Table 2 makes the test difficult, then it is permissible to use a pressing jig as shown in Table 2, laid out so that pressure can be applied with the winding core in contact with the center of the inserted part of the small piece of metallic nickel.</p> <p>b) After inserting the small piece, the winding core shall be reassembled to its original form, and sealed into a bag without permeability of electrolyte vapors. The time period between dismantling of the charged cell and closing of the bag shall be within 30 minutes.</p> <p>c) The closed bag containing the winding core shall be stored for 45 ± 15 minutes at each the highest test temperature and the lowest test temperature specified in Annex Table 1-2. Then the winding core shall be taken out from the bag.</p> <p>d) Immediately after taking out the winding core from the bag, a pressing jig as shown in Table 2 shall touch on the winding core, where said small piece of metallic nickel is inserted, and the pressing jig shall be lowered at a rate of 0.1mm/second at the highest and the lowest test temperatures specified in Annex Table 1-2.</p> <p>e) The lowering of the pressing jig shall be stopped when a voltage drop of over 50 mV is obtained or the pressure reaches 800 N (whichever occurs earlier). Provided that, for prismatic cells, the lowering of the pressing jig shall be stopped when the pressure reaches 400 N.</p> <p>f) The test shall be conducted from steps a to e until five samples prove to have undergone a voltage drop. Provided that there is a maximum number of ten test samples. Table 2 Position of insertion in forced internal short circuit test and usage of pressing jig</p>		P
	Acceptance criteria: no fire	See appended table N	



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(11)	Function of the overcharge protection of batteries		N/A
	The batteries shall be tested at an ambient temperature of 20 ± 5°C, by using any method specified below:		N/A
	a) For batteries made of a one cell block, the voltage applied to the cell block during charging shall be measured.		N/A
	b) For batteries consisting of a series of two pieces or more of cell blocks, it shall be charged while measuring the voltage of each cell block and at the same time, one cell block shall forcibly be discharged and the voltages of the other cell blocks shall gradually be measured.		N/A
	c) For batteries consisting of a series of connection of two pieces or more of cell blocks, a voltage exceeding the upper limited charging voltage specified in Annex Table 1-2 shall be applied to the cell block while measuring the voltage of each cell block. When the charging stops, the voltage shall be measured.		N/A
	Acceptance criteria: The cell block in the battery shall not exceed the upper limited charging voltage specified in Annex Table 1-2	See appended table O	N/A
(12)	Free fall of appliance		
	The charged batteries shall be tested under the following test conditions: At an ambient temperature of 20 ± 5°C, according to the appliance specified in the left field of Table 3, the charged battery shall be installed in appliance to be used, and shall be dropped once onto a concrete floor or iron plate in a direction considered to most likely affect the battery in a negative manner Otherwise, an equivalent load shall be applied to said battery. However, this does not apply to portable appliance including battery weighing more than 7 kg or desktop appliance (excluding for appliance that may be carried around) weighing more than 5 kg including battery.		N/A
	The measure of battery dropping with the equipment are provided by the manufacturer. Acceptance criteria: The samples shall not undergo short-circuiting	See appended table P	
4	Labeling		
	Labeling shall be provided as specified in Annex Table 3. Item to be indicated: 1. Rated voltage (batteries) 2. Rated capacity (batteries) The label shall easily be seen but not easily faded.		P



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Annex table 1 Test conditions for lithium ion secondary cells and batteries

Table 1-1 Test item, charge temperature, test temperature, and quantity tested.

Test item	Cell			Battery		
	Charge temperature	Test temperature	Quantity tested	Charge temperature	Test temperature	Quantity tested
Continuous low-rate charging	20 ± 5 °C	20 ± 5 °C	5	--	--	--
Vibration	20 ± 5 °C	20 ± 5 °C	5	20 ± 5 °C	20 ± 5 °C	5
Battery enclosure test at high ambient temperature	--	--	--	20 ± 5 °C	70 ± 2 °C	3
Temperature cycling	20 ± 5 °C	--	5	20 ± 5 °C	--	5
External short circuit	20 ± 5 °C	55 ± 5 °C	5	20 ± 5 °C	20 ± 5 °C	5
Free fall	20 ± 5 °C	20 ± 5 °C	3	20 ± 5 °C	20 ± 5 °C	3
Mechanical shock (crash hazard)	20 ± 5 °C	20 ± 5 °C	5	20 ± 5 °C	20 ± 5 °C	5
Thermal abuse	20 ± 5 °C	130 ± 2 °C	5	--	--	--
Crushing of cells	20 ± 5 °C	20 ± 5 °C	5 Provided that, for prismatic cells, five are to be tested for wide sides and five for narrow sides.	--	--	--
Low pressure	20 ± 5 °C	--	3	--	--	--
Overcharge	--	20 ± 5 °C	5	--	--	--
Forced discharge	--	20 ± 5 °C	5	--	--	--



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Cell protection against a high charging rate	--	20 ± 5 °C	5	--	--	--
Forced internal short circuit of cells	Highest test temperature	Highest test temperature	5	--	--	--
	Lowest test temperature	Lowest test temperature	5	--	--	--
Function of The overcharge protection of batteries	--	--	--	--	20 ± 5 °C	1
Free fall of appliance	--	--	--	20 ± 5 °C	20 ± 5 °C	3

Table 1- 2 Charge procedure for testing

Charge procedure	When a test is to be conducted on a cell or battery charged at a charge temperature of 20 ± 5°C, the cell or the battery shall be charged to a fully charged state by using the designed method at an ambient temperature of 20 ± 5°C. Other tests on cells shall be conducted by using cells which, unless otherwise specified, are stabilized for a period of one to four hours at the highest and the lowest test temperatures specified below, and then tested at the upper limited charging voltage and the maximum charging current until the current reaches 0.05 ItA when controlled for constant-voltage charging. Tests on batteries shall be conducted by using charged batteries at an ambient temperature at the highest and the lowest test temperatures specified below until the batteries reach the design fully charged state of the batteries or equipment. Provided that, prior to charging, cells and batteries shall be used after having been discharged to a designed final voltage, at an ambient temperature of 20 ± 5°C and at a constant current of 0,2 ItA.
Upper limited charging voltage	4,25 V
Maximum charging current	Designed value
Highest test temperature	50 °C
Lowest test temperature	0 °C



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TABLE: List of critical components					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾
INR18650-29EA					
Cell	Hengdian Group DMEGC Magnetics Co., Ltd.	INR18650- 29EA	3,6 V, 2900 mAh	--	Tested with appliance
- Electrolyte	Shenzhen Capchem Technology Co., Ltd.	--	EC/EMC/DMC/Li PF6	--	--
- Separator	Cangzhou Mingzhu Plastic Co., Ltd.	16 um*61mm	Material: PE, Coating Film Shutdown temperature: 138±10°C	--	--
- Positive material	XingXiang TianLi Energy Co., Ltd.	NCM	NCM	--	--
- Negative material	Jiangxi Zichen Technology Co., Ltd.	Graphite	Compound graphite	--	--
INR18650-29E					
Cell	Hengdian Group DMEGC Magnetics Co., Ltd.	INR18650-29E	3,7 V, 2900 mAh	--	Tested with appliance
- Electrolyte	Shenzhen Capchem Technology Co., Ltd.	--	EC/EMC/DMC/Li PF6	--	--
- Separator	Cangzhou Mingzhu Plastic Co., Ltd.	16 um*61mm	Material: PE, Coating Film Shutdown temperature: 138±10°C	--	--
- Positive material	XingXiang TianLi Energy Co., Ltd.	NCM	NCM	--	--



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- Negative material	Jiangxi Zichen Technology Co., Ltd.	Graphite	Compound graphite	--	--
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Appended table A: Continuous charging at constant voltage					
Sample No.	INR18650-29EA (#1)	INR18650-29EA (#2)	INR18650-29EA (#3)	INR18650-29EA (#4)	INR18650-29EA (#5)
Sample No.	INR18650-29E (#1)	INR18650-29E (#2)	INR18650-29E (#3)	INR18650-29E (#4)	INR18650-29E (#5)
Results	NF, NE, NL	NF, NE, NL	NF, NE, NL	NF, NE, NL	NF, NE, NL

Appended table B: Vibration					
Sample No. (cell)	INR18650-29EA (#6)	INR18650-29EA (#7)	INR18650-29EA (#8)	INR18650-29EA (#9)	INR18650-29EA (#10)
Sample No. (cell)	INR18650-29E (#6)	INR18650-29E (#7)	INR18650-29E (#8)	INR18650-29E (#9)	INR18650-29E (#10)
Sample No. (pack)	--	--	--	--	--
Results	NF, NE, NL	NF, NE, NL	NF, NE, NL	NF, NE, NL	NF, NE, NL

Appended table C: Battery enclosure test at high ambient temperature					
Sample No.	--	--	--	--	--
Results	--	--	--	--	--

Appended table D: Temperature cycling					
Sample No. (cell)	INR18650-29EA (#19)	INR18650-29EA (#20)	INR18650-29EA (#22)	INR18650-29EA (#23)	INR18650-29EA (#24)
Sample No. (cell)	INR18650-29E (#19)	INR18650-29E (#20)	INR18650-29E (#22)	INR18650-29E (#23)	INR18650-29E (#24)
Sample No. (pack)	--	--	--	--	--
Results	NF, NE, NL	NF, NE, NL	NF, NE, NL	NF, NE, NL	NF, NE, NL

Appended table E: External short circuit					
Test Temp.	55°C ±5°C				
Sample No. (cell)	INR18650-29EA (#42)	INR18650-29EA (#43)	INR18650-29EA (#44)	INR18650-29EA (#45)	INR18650-29EA (#46)
Sample No. (cell)	INR18650-29E (#42)	INR18650-29E (#43)	INR18650-29E (#44)	INR18650-29E (#45)	INR18650-29E (#46)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE
Test Temp.	55°C ±5°C				
Sample No. (cell)	INR18650-29EA (#47)	INR18650-29EA (#48)	INR18650-29EA (#48)	INR18650-29EA (#50)	INR18650-29EA (#51)
Sample No. (cell)	INR18650-29E (#47)	INR18650-29E (#48)	INR18650-29E (#48)	INR18650-29E (#50)	INR18650-29E (#51)



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Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE
Test Temp.	--				
Sample No. (pack)	--	--	--	--	--
Results	--	--	--	--	--
Test Temp.	--				
Sample No. (pack)	--	--	--	--	--
Results	--	--	--	--	--

Appended table F: Free fall

Sample No. (cell)	INR18650-29EA (#72)	INR18650-29EA (#73)	INR18650-29EA (#74)
Sample No. (cell)	INR18650-29E (#72)	INR18650-29E (#73)	INR18650-29E (#74)
Sample No. (pack)	--	--	--
Results	NF, NE	NF, NE	NF, NE

Appended table G: Mechanical shock (crash hazard)

Sample No. (cell)	INR18650-29EA (#81)	INR18650-29EA (#82)	INR18650-29EA (#83)	INR18650-29EA (#84)	INR18650-29EA (#85)
Sample No. (cell)	INR18650-29E (#81)	INR18650-29E (#82)	INR18650-29E (#83)	INR18650-29E (#84)	INR18650-29E (#85)
Sample No. (pack)	--	--	--	--	--
Results	NF, NE, NL	NF, NE, NL	NF, NE, NL	NF, NE, NL	NF, NE, NL

Appended table H: Thermal abuse

Sample No.	INR18650-29EA (#96)	INR18650-29EA (#97)	INR18650-29EA (#98)	INR18650-29EA (#99)	INR18650-29EA (#100)
Sample No.	INR18650-29E (#96)	INR18650-29E (#97)	INR18650-29E (#98)	INR18650-29E (#99)	INR18650-29E (#100)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE
Sample No.	INR18650-29EA (#101)	INR18650-29EA (#102)	INR18650-29EA (#103)	INR18650-29EA (#104)	INR18650-29EA (#105)
Sample No.	INR18650-29E (#101)	INR18650-29E (#102)	INR18650-29E (#103)	INR18650-29E (#104)	INR18650-29E (#105)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE



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Appended table I: Crushing of cells					
Sample No.	INR18650-29EA (#106)	INR18650-29EA (#107)	INR18650-29EA (#108)	INR18650-29EA (#109)	INR18650-29EA (#110)
Sample No.	INR18650-29E (#106)	INR18650-29E (#107)	INR18650-29E (#108)	INR18650-29E (#109)	INR18650-29E (#110)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE
Sample No.	INR18650-29EA (#111)	INR18650-29EA (#112)	INR18650-29EA (#113)	INR18650-29EA (#114)	INR18650-29EA (#115)
Sample No.	INR18650-29E (#111)	INR18650-29E (#112)	INR18650-29E (#113)	INR18650-29E (#114)	INR18650-29E (#115)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE

Appended table J: Low pressure			
Sample No.	INR18650-29EA (#116)	INR18650-29EA (#117)	INR18650-29EA (#118)
Sample No.	INR18650-29E (#116)	INR18650-29E (#117)	INR18650-29E (#118)
Results	NF, NE, NL	NF, NE, NL	NF, NE, NL

Appended table K: Overcharge					
Sample No.	INR18650-29EA (#119)	INR18650-29EA (#120)	INR18650-29EA (#121)	INR18650-29EA (#122)	INR18650-29EA (#123)
Sample No.	INR18650-29E (#119)	INR18650-29E (#120)	INR18650-29E (#121)	INR18650-29E (#122)	INR18650-29E (#123)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE
Sample No.	INR18650-29EA (#124)	INR18650-29EA (#125)	INR18650-29EA (#126)	INR18650-29EA (#127)	INR18650-29EA (#128)
Sample No.	INR18650-29E (#124)	INR18650-29E (#125)	INR18650-29E (#126)	INR18650-29E (#127)	INR18650-29E (#128)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE

Appended table L: Forced discharge					
Sample No.	INR18650-29EA (#129)	INR18650-29EA (#130)	INR18650-29EA (#131)	INR18650-29EA (#132)	INR18650-29EA (#133)
Sample No.	INR18650-29E (#129)	INR18650-29E (#130)	INR18650-29E (#131)	INR18650-29E (#132)	INR18650-29E (#133)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE
Sample No.	INR18650-29EA (#134)	INR18650-29EA (#135)	INR18650-29EA (#136)	INR18650-29EA (#137)	INR18650-29EA (#138)
Sample No.	INR18650-29E (#134)	INR18650-29E (#135)	INR18650-29E (#136)	INR18650-29E (#137)	INR18650-29E (#138)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE



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Appended table M: Cell protection against a high charging rate					
Sample No.	INR18650-29EA (#139)	INR18650-29EA (#140)	INR18650-29EA (#141)	INR18650-29EA (#142)	INR18650-29EA (#143)
Sample No.	INR18650-29E (#139)	INR18650-29E (#140)	INR18650-29E (#141)	INR18650-29E (#142)	INR18650-29E (#143)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE
Sample No.	INR18650-29EA (#144)	INR18650-29EA (#145)	INR18650-29EA (#146)	INR18650-29EA (#147)	INR18650-29EA (#148)
Sample No.	INR18650-29E (#144)	INR18650-29E (#145)	INR18650-29E (#146)	INR18650-29E (#147)	INR18650-29E (#148)
Results	NF, NE	NF, NE	NF, NE	NF, NE	NF, NE

Appended table N: Forced internal short circuit of cells					
Charge Temp.	50°C				
Test Temp.	50°C				
Sample No.	INR18650-29EA (#149)	INR18650-29EA (#150)	INR18650-29EA (#151)	INR18650-29EA (#152)	INR18650-29EA (#153)
Sample No.	INR18650-29E (#149)	INR18650-29E (#150)	INR18650-29E (#151)	INR18650-29E (#152)	INR18650-29E (#153)
Results	NF	NF	NF	NF	NF
Charge Temp.	0°C				
Test Temp.	0°C				
Sample No.	INR18650-29EA (#154)	INR18650-29EA (#155)	INR18650-29EA (#156)	INR18650-29EA (#157)	INR18650-29EA (#158)
Sample No.	INR18650-29E (#154)	INR18650-29E (#155)	INR18650-29E (#156)	INR18650-29E (#157)	INR18650-29E (#158)
Results	NF	NF	NF	NF	NF

Appended table O: Function of the overcharge protection of batteries									
Sample No.	--								
Cell (block) voltage	--	--	--	--	--	--	--	--	--
Results	--								

Appended table P: Free fall of appliance		
Sample No.	--	--
Results	--	

NOTE: In the appended tables A~P, NF means no fire, and NE means no explosion, and NL means no leakage, and ND means no deformation.



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INR18650-29EA



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TRF No. EEC_Ordinance_Table 9_Batt A

型式の区別
Type classification

単電池の形状 Figure of single cells	<input checked="" type="checkbox"/> 円筒形のもの cylindrical <input type="checkbox"/> 角形のもの prismatic <input type="checkbox"/> その他のもの others
単電池の電解質の種類 Electrolyte type of single cells	<input checked="" type="checkbox"/> 液体状のもの liquid state <input type="checkbox"/> その他のもの others
単電池の上限充電電圧 Upper Limited charging voltage	<input checked="" type="checkbox"/> 4,25V以下のもの 4,25V below <input type="checkbox"/> 4,25Vを超えるもの 4,25V above
組電池の質量 Weight of battery packs	<input type="checkbox"/> 7kg以下のもの 7kg below <input type="checkbox"/> 7kgを超えるもの 7kg above
電池ブロックの個数 Number of cells	<input type="checkbox"/> 1個のもの single cell <input type="checkbox"/> 2個以上のもの two or more than
過充電の保護機能 Mode of protective device	<input type="checkbox"/> 組電池で制御するもの A protective device In the battery pack <input type="checkbox"/> 組電池搭載機器又は充電器で制御するもの A protective device in the charger used with the battery packs.
用途 Usage	<input type="checkbox"/> 携帯機器用のもの Portable devices <input type="checkbox"/> 卓上機器用のもの On-table devices <input checked="" type="checkbox"/> その他のもの others
組電池の種類	<input type="checkbox"/> はんだ付けその他の接合方法により、容易に取り外すことができない状態で機械器具に固定して用いられるものその他の特殊な構造のもの By soldering or bonding method, the special structure of the other state that cannot be easily removed by fixed equipment <input type="checkbox"/> その他のもの others

- - - End of Report - - -



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