

# **Test Report**

Report No.: TCT210324C004 Date: Mar. 29, 2021 Page No.: 1 of 3

Applicant:

Address:

The following sample was submitted and identified by/on behalf of the client as:

Sample Name: Rechargeable lithium polymer battery

Model No.: Y 801727

Trade Mark: Y

Sample Received Date: 2021.03.24

Testing Period: 2021.03.24—2021.03.29

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 the following page(s).
Test Result(s): Please refer to the following page(s).

Conclusion: Test results of submitted sample(s) comply with the limit set by Directive

2006/66/EC and its amendment 2013/56/EU.

Checked by

Sin Lu

Signed for and on behalf of TCT

Noel Yin

Technical Manager



# **Test Report**

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#### Test Results:

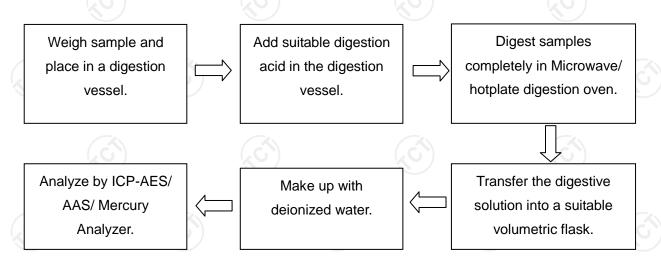
### Lead, Cadmium and Mercury Content(s)

Test Items	Test Method	Unit	Test Results	MDL	Labelling Requirement <sup>#</sup>	Permissible Limit
Lead (Pb)	With reference to		N.D.	0.0010	>0.004	<u></u>
Cadmium (Cd)	GB/T 20155-2018, Analysis was performed by ICP-OES	% (w/w)	N.D.	0.0010	>0.002	0.002##
Mercury (Hg)			N.D.	0.0001	>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.
- = Mot 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 battery sample.
- "--" = Not Regulated.
- According to the article 21.1, all batteries, accumulators and battery packs should be appropriately marked with the crossed-out wheeled bin symbol.

#### **Test Process:**



1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com



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# Photo(s) of the sample(s)



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

Remark: This report is considered invalidated without the Special Seal for Inspection of the TCT. This report shall not be altered, increased or deleted. The results shown in this test report refer only to the sample(s) tested. Without written approval of TCT, this test report shall not be copied except in full and published as advertisement.



# **TEST REPORT**

**Reference No.** ..... : WTF21D04030467B

Applicant.....: Mid Ocean Brands B.V.

Address ...... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon,

Hong Kong

Manufacturer .....: Mid Ocean Brands B.V.

Address .....: 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon,

Hong Kong

Product Name.....: Rechargeable Li-ion Cell

Model No. ..... : 801727

Trade Mark .....: N/A

Total pages. ..... 22 pages

**Standards**.....: IEC 62133-2:2017

Date of Receipt sample .... : 2021-04-19

Date of Test..... : 2021-04-19~2021-05-17

**Date of Issue**..... : 2021-05-18

Test Result .....: : The submitted samples comply with the above standards

#### Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

# Prepared By: Waltek Testing Group Co., Ltd.

Address: No. 77, Houjie Section, Guantai Road, Houjie Town, Dongguan City, Guangdong, China Tel:+86-769-2267 6998
Fax:+86-769-2267 6828

Compiled by:

Approved by:

Dardy Cheng / Project Engineer

Deval Qin / Designated Reviewer

eval gin

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Summary of testing:	
Tests performed (name of test and test clause):	Testing location: Waltek Testing Group Co., Ltd.
	No. 77, Houjie Section, Guantai Road,
(cells)	Houjie Town, Dongguan City, Guangdong, China
☐7.2.2 Case stress at high ambient temperature	the my my that
(battery)	LEX TEX STEX STEEL STEEL STEEL STATE
∑7.3.1 External short-circuit (cell)	White the Aut the Aut
☐7.3.2 External short-circuit (battery)	the state of the state of
⊠7.3.3 Free fall	THE RITE WITE WALL WALL WALL WALL WALL
	of the second
∑7.3.5 Crush (cells)	EX TEX LITER OLITER WITH WITH WHILL WHILL
☐7.3.6 Over-charging of battery	in the the the the
⊠7.3.7 Forced discharge (cells)	at ret rest trest outlier mark
☐7.3.8.1 Vibration	the wife which will have all the
☐7.3.8.2 Mechanical shock	The state of the s
☐7.3.9 Design evaluation – Forced internal short	t life alife mile unit wall wall was
circuit (cells)	In an a

Reference No: WTF21D04030467B

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Classification of installation and use	Test item particulars:	
Recommend charging method declaired by the manufacturer	Classification of installation and use	Built-in and use in portable applications
manufacturer	Supply connection	Customize DC connection.
Specified final voltage:		reaches 4.2V, then charge at a constant voltage 4.2V till
Upper limit charging voltage per cell:	Discharge current (0,2 I <sub>t</sub> A)	56mA
Maximum charging current	Specified final voltage:	3V 4 At At
Charging temperature upper limit	Upper limit charging voltage per cell:	4.23V
Charging temperature lower limit	Maximum charging current	280mA
Polymer cell electrolyte type	Charging temperature upper limit	45°C
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)  Testing	Charging temperature lower limit	0 °C
- 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)  Testing	Polymer cell electrolyte type	☐ gel polymer ☐ solid polymer ☐ N/A
Date (s) of performance of tests: 2021-04-19  General remarks:  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 "(See Enclosure #)" refers to additional information appended to the report.  "(See appended table)" refers to a table appended to the report.	- test case does not apply to the test object test object does meet the requirement	.: P (Pass)
Date (s) of performance of tests: 2021-04-19~2021-05-17  General remarks:  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 "(See Enclosure #)" refers to additional information appended to the report.  "(See appended table)" refers to a table appended to the report.	Testing	IN THE TEXT STEP STIFF STIFF STATE OF
General remarks:  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 "(See Enclosure #)" refers to additional information appended to the report.  "(See appended table)" refers to a table appended to the report.	Date of receipt of test item	: 2021-04-19
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 "(See Enclosure #)" refers to additional information appended to the report.  "(See appended table)" refers to a table appended to the report.	Date (s) of performance of tests	: 2021-04-19~2021-05-17
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory "(See Enclosure #)" refers to additional information appended to the report.  "(See appended table)" refers to a table appended to the report.	General remarks:	THE THE STATE WITH MITTER
inroughout this report acomma /point is used as the decimal separator.	This report shall not be reproduced, except in full, with "(See Enclosure #)" refers to additional information a "(See appended table)" refers to a table appended to	nout the written approval of the Issuing testing laboratory. appended to the report. the report.
Name and address of factory (ies): Same as manufacturer		



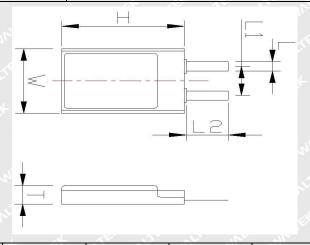
## General product information:

The cells and batteries have been tested and evaluated according to their specified working conditions (as given below), which are provided by client.

Details information of the cell and battery, as following:

Product	Cell
Model	801727
Nominal voltage	White was and 3.7V
Rated capacity	280mAh
Charge method	CC/CV
Charge temp. range	0~45°C
Std. charge current	140mA
Max. charge current	280mA
Max. discharge current	280mA
Upper limit charge voltage	4.23V
End-of-charge current	2.8mA
Discharge Cut-off voltage	3V 3V
Dimension	28.0mm x 18.0mm x 8.2mm
Weight	Approx. 5.89g
Shape	Prismatic





	NITE OF	2±0.2	L1	4±2	L2	5±2
3	TEL T	8.0+0.2 - 0.2	W	17.5+0.5 – 0.5	AUT H AUT	27.0+1 –1
212	711	10	Units	s: mm	JER JIE	Will Mr.



### 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.

-Rechargeable Li-ion Cell 801727 ICP9/18/28 3.7Vd.c., 280mAh, 1.036Wh YYYYMMDD



Remark: "YYYY" represents the year of manufactured, "MM" represents the month of manufactured, "DD" represents the day of manufactured.



" Whi	IEC 62133-2:2017	THE LIFE WITE WITE WA	, alle		
Clause	Requirement + Test	Result - Remark	Verdict		
CIO.C.C.		Life with white white	10,6,0		
4	Parameter measurement tolerances				
111/2	Parameter measurement tolerances	All control and measure values	Р		
at .	THE LIFE OF THE WIFE WHITE WHITE WHITE	were within the tolerances.	TEX.		
in in	Will the state of	RITER WITE WITE WITE W	<u></u>		
5	General safety considerations		, P		
5.1	General	Considered	Р		
5.2	Insulation and wiring		P		
WALTER W	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 $\mbox{M}\Omega$	white white white white	N/A		
Let !	Insulation resistance (MΩ)	- + + +	11th		
er vill	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements	to white many was an	N/A		
JEX	Orientation of wiring maintains adequate creepage and clearance distances between conductors	WAL WAS THE THE	N/A		
The .	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse	while must must must	P		
5.3	Venting	White White A	L PM		
SEL MUL	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	White white w	FEX PUBLI		
WALTER	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief	white white white whi	N/A		
5.4	Temperature/voltage/current management	he me me m	N/A		
LIFET WA	Batteries are designed such that abnormal temperature rise conditions are prevented	TER MATTER MATTER MATTER OF	N/A		
EK WALTE	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	t multer multer multer mul	N/A		
wnite mitek	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	MALITER WALTER WALTER WALTER	N/A		
5.5	Terminal contacts	at the text the	N/A		
\$ \tag{2}	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Mus Mrs Mrs Mr	N/A		



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IEC 62133-2:2017					
Clause	Requirement + Test	Result - Remark	Verdict		
2/1	W THE SELECTION OF THE PROPERTY OF THE PROPERT	WALT WILL WALL	mr. m.		
MUTER A	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	MITEL WALLEY WALLEY	N/A		
Tite AV	Terminal contacts are arranged to minimize the risk of short circuits	LIER WILLER WILLER WI	N/A		
5.6	Assembly of cells into batteries	of the the	N/A		
5.6.1	General	any may my	N/A		
WHITE	Each battery has 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.	WHITEK WHITEK WHITEK	N/A		
er Tek	This protection was provide esternal to the battery such as within the chargeer or the end devices.	by the the	N/A		
ek vantie	If protection is external to the battery ,the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation.	whilet while while	N/A		
White.	If there is more than one battery housed in a single battery case, each battery has protective circuitry that can maintain the cells within their operating regions.	Whitek whitek whitek	N/A		
iek vil	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/ designer may ensure proper design and assembly	The survive of	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.	whitek whitek whitek	N/A		
MULTER D	Protective circuit components are added as appropriate and consideration given to the end-device application	Wilek Muriek Muriek	N/A		
EK MUTE	The manufacturer of the battery provides 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	TEX ITEX ITEX	N/A		
INLIEK VII	For the battery consisting of a single cell or a single cellblock, the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2;	TILER MULTER MULTER M	N/A		
TE JUNES MALTER	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 Table 2, by monitoring the voltage of every single cell or the single cellblocks	EX WHITEX WHITE WHITE	N/A		



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211	IEC 62133-2:2017	in with mur wire	24, 40
Clause	Requirement + Test	Result - Remark	Verdict
ah.	W W A A EX TEX NUTER INLIE	White Muss Mrs.	Mr. M.
WUTEK WU	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 is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks	ITEX WHITEK WHITEK	N/A
ier White	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage were not counted as an overcharge protection.	MULTER WHITER WHITE	N/A
unitek w	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	White white white	N/A
LIEK WAL	The cells and cell blocks not discharged beyond the cell manufacturer's specified final voltage	ek altek mitek mi	N/A
y walte	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system	- Whitek whitek whitek	N/A
5.6.3	Mechanical protection for cells and components of batteries	STEET MITTER SUNTER	N/A
NITEK VIN	Mechanical protection for cells, cell connections and control circuits within the battery were provided to prevent damage as a result of intended use and reasonably foreseeable misuse.	THE MATTER WA	N/A
L NITEX	The mechanical protection was provided by the battery case or by the end product enclosure for those batteries intended for building into an end product	White Authorities	N/A
MUTIEK A	The battery case and compartments housing cells were designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer	WILE MUTER MUTER	N/A
LIE WI	For batteries intended for building into a portable end product, testing with the battery installed within the end product was considered when conducting mechanical tests	TEK WALTER WALTER WAL	N/A
5.7	Quality plan	Mr. In m.	P
whitek w	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	Whitek Whitek Whitek	until un'P
5.8	Battery safety components	at all all s	N/A



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Lite and	The	IEC 62133-2:2017	TEK INTEK WALTER	Write M	All Carried
Clause	Requirement + Test	it, mur, m, m	Result - Remark	alt al	Verdict

6	Type test and sample size		Р
WITEK N	Tests were made with the number of cells or batteries specified in Table 1, using cells or batteries that are not more than six months old.	The thee other with	NITEK WILL
IEK MUL	The internal resistance of coin cells be measured in accordance with Annex D. Coin cells with internal resistance less than or equal to 3 $\Omega$ were tested in accordance with Table 1.	MULTER WHITER WHITER WHI	N/A
MILL	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.	WHITE WALL WALL WALL	un'P (
MILIEN.	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and over discharge protection	Considered.	int P un
ik whi	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	Considered.	P P PK

7	Specific requirements and tests		Р
7.1	Charging procedures for test purposes	Considered.	CITE P N
7.1.1	First procedure: This charging procedure applied to tests other than those specified in 7.1.2	See below.	TEX P
WILLEY VIEW	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of 20 °C ± 5 °C, using the method declared by the manufacturer	WHITEK WHITEK WHITEK	P
une .	Prior to charging, the battery shall have been discharged at 20 °C ± 5 °C at a constant current of 0,2 It A down to a specified final voltage	White white white was	ON P V
7.1.2	Second procedure: This charging procedure applied to the tests of 7.3.1, 7.3.4, 7.3.5, and 7.3.9	the street writest writest and	P EK WILLE
MILIER MILIER	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 lt A, using a constant voltage charging method	MULTER WALTER WALTER WALTER	PH WILLER
7.2	Intended use	See below	Р
7.2.1	Continuous charging at constant voltage (cells)	Considered	y P
nu.	Results: No fire, no explosion, no leakage:	No fire, no explosion, no leakage (See Table 7.2.1)	√l)P



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24	IEC 62133-2:2017	The war war and	20,
Clause	Requirement + Test	Result - Remark	Verdict
alex	AND THE ALLER WITH	MULL MULL MAL MAR	40.
7.2.2	Case stress at high ambient temperature (battery)	at left test ites	N/A
1112 1	Oven temperature (°C)	" The man was any	20, ,
TILEK AN	Results: No physical distortion of the battery casing resulting in exposure if internal components	LIER WILLER WHITER WHITER	N/A
7.3	Reasonably foreseeable misuse	See below	P C
7.3.1	External short-circuit (cell)	Considered	Р
WALTER	The cells were tested until one of the following occurred: - 24 hours elapsed; or	WALTER MALTER WALTER WALTE	N/A
INLIE W	- The surface temperature declined by 20% of the maximum temperature rise	Considered	MILI P W
LIEK WAL	Results: No fire, no explosion:	No fire. No explosion (See Table 7.3.1)	TE P
7.3.2	External short-circuit (battery)	- at let sat s	N/A
	The batteries were tested until one of the following occurred: - 24 hours elapsed; or	TEX TEX STEX STEEL STEEL	N/A
LIEX	- The case temperature declined by 20% of the maximum temperature rise	at The life	N/A
iek aniti	In case of rapid decline in short circuit current, the battery remained on test for an additional one hour after the current reached a low end steady state condition	A MILL MALLER MULTER MA	N/A
MALTE	A single fault in the discharge protection circuit were conducted on one to four of the five samples before conducting the short-circuit test	WHITEK WHITEK WAITER WHITE	N/A
Mr.C. a	Results: No fire, no explosion:	(See Table 7.3.2)	N/A
7.3.3	Free fall	Considered	P
1/2	Results: No fire, no explosion.	No fire, no explosion.	P
7.3.4	Thermal abuse (cells)	Considered	P.C
1/1/2	The cells were held at 130°C ± 2°C for 30 minutes;	Considered	Р
WALTER	Oven temperature (°C):	The oven temperature was raised at a rate of 5°C /min ± 2°C /min to a temperature of 130°C ± 2°C.	WALTER ON
4	Results: No fire, no explosion.	No fire, no explosion	Р
7.3.5	Crush (cells)	Considered	PILL BUT
t white	The crushing force was released upon: - The maximum force of 13 kN ± 078 kN has been applied; or	Considered	Y P EX



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. With	M. M. M.	IEC 62133-2:2017	The Mr.
Clause	Requirement + Test	Result - Remark	Verdict

NALTER	- An abrupt voltage drop of one-third of the original voltage has been obtained; or	LIER WIFE WIFER	N/A
LTEX VIII	Results: No fire, no explosion:	No fire, no explosion (See Table 7.3.5)	F TELL P
7.3.6	Over-charging of battery	70° - 7	N/A
where	Sample batteries be charged at a constant current of 2.0 It A, using a supply voltage which is:	WALTER WALTER WALTER	N/A
MULTE	- 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	WHITE WALLE WALLE W	N/A
ne w Iek ni	- 1.2 times the upper limit charging voltage presented in Table A.1 per cell for series connected multi-cell batteries, and	NITE WALL WALL WALL	N/A
y WALTE	- sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached.	t stiff with while	N/A
MILIEK.	Test was continued until the temperature of the outer casing: - Reached steady state conditions (less than 10°C change in 30-minute period); or	Whitek whitek whi	N/A
in an	- Returned to ambient.	White war	N/A
et s	Results: No fire, no explosion:	(See Table 7.3.6)	N/A
7.3.7	Forced discharge (cells)	Considered.	ALL P
unitek unitek	- The discharge voltage reaches the negative value of upper limit charging voltage within the testing duration, the voltage maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration	Whitek whitek whitek w	N/A
itek mi	- The discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration, the test terminated at the end of the testing duration	TEX WALTER WALTER WALTE	L HEFE P
Mer	Results: No fire. No explosion:	(See Table 7.3.7)	an P
7.3.8	Mechanical tests (batteries)	1 1 1	N/A
7.3.8.1	Vibration	WILL MALL MALL WILL WI	N/A
NLTEK W	Results: No fire, no explosion, no rupture, no leakage or venting.	(See Table 7.3.8.1)	N/A
7.3.8.2	Mechanical shock		N/A
, mr	Results: No leakage, no venting, no rupture, no explosion and no fire during test	(See Table 7.3.8.2)	N/A
7.3.9	Design evaluation – Forced internal short circuit (cells)	- SLIER MILIER MILIER	Intra Pre



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	IEC 62133-2:2017		
Clause	Requirement + Test	Result - Remark	Verdict
7/12	We will not the matter south	" Write Mure Mure M.	1 Vr
	The cells complied with national requirement for:	France, Japan, Korea, Switzerland	ell Marie .
LIEK MY	The pressing was stopped upon: - A voltage drop of 50 mV has been detected; or	TEK TEK OUTER MITER	WALTEL DAY
EK NITE	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	400N	NIEK P
TEX	Results: No fire:	No fire (See Table 7.3.9)	Р

8	Information for safety	The state of the	P
8.1	General	WILL MILL MILLS AND THE MINES	200
TEX W	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.	Showed in specification	ITEK P
Whitek	The manufacturer of batteries ensures that equipment manufacturers and, in the case of direct sales, endusers are provided with information to minimize and mitigate hazards.	Whitek whitek whitek wh	I NATE
NITER V	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product	THE WALLEY WALLEY	VALIE P
ir uni	As appropriate, information relating to hazard avoidance resulting from a system analysis is provided to the end user	white units while of	P
Aller Aller	Do not allow children to replace batteries without adult supervision	MULL AND MULL AND	P AND
8.2	Small cell and battery safety information	Small cell	an P
ITEK W	Small cells and batteries and equipment using small cells and batteries are to be provided with information regarding ingestion hazards	Tex writer writer writer.	MATER P
TH WILL	Small cells and batteries that may pose an ingestion hazard are those that can fit within the limits of the ingestion gauge shown in Figure 3.	L MULTER MULTER MU	i Pi
JUNET INLIEK	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:  -Keep small cells and batteries which are considered swallowable out of the reach of children	MUNITER MULTER MULTER MULTER	nin P
	-Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion	EX MATER WALTER WALTER	n Pi
m.	-In case of ingestion of a cell or battery, seek medical assistance promptly	mile mil mer m	P



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Land	The man was	IEC 62133-2:2017	TEX WITE MUTTER AND TEXT AND	in Albert
Clause	Requirement + Test	it with any	Result - Remark	Verdict

9	Marking		Р
9.1	Cell marking	WILL MULL MULL MINE	Р
AEX.	Cells marked as specified in IEC 61960	at at let let	UP P
ek 	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity	et tek tek bitek bitek di	N/A
WALTER .	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. However, the cell marking can be indicated with the battery, the instructions and/or the specifications.	Whilek whilek whilek whilek	P VINITELY VINLEY
9.2	Battery marking		N/A
, 1n	Batteries marked as specified in IEC 61960	TER WITE WILL MUTE AN	N/A
* Whi	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity	WALTER WALTER WALTER WALT	N/A
MALTER	Batteries marked with an appropriate caution statement.	NITER MITER MATER MALTER	N/A
TILE V	Terminals have clear polarity marking on the external surface of the battery	ALL STREET MATERIALS	N/A
ex wh	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	E WHITE WHITE WA	N/A
9.3	Caution for ingestion of small cells and batteries	Wer Aur Au My	N/A
JEK TEK	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	WILE MUTER WHITER WHITER	N/A
ار الماري	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package	t tet stet with the	N/A
9.4	Other information	See below.	Р
MULLE	Storage and disposal instructions marked on or supplied with the battery.	Information for safety mentioned in manufacturer's specification.	Wh P
NGT .	Recommended charging instructions marked on or supplied with the battery.	Information for safety mentioned in manufacturer's specification.	Р

10		Packaging and transport	is at at a	+ Prest
	m.	Packaging for coin cells shall not be small enough to fit within the limits of the ingestion gauge of Figure 3	Considered.	₩P



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The Maria	Ang Ang Ang Ang	IEC 62133-2:2017	SEX MITER WALLER WALLER WA	in and
Clause	Requirement + Test	Aller Aller	Result - Remark	Verdict

Annex A	nnex A Charging range of secondary lithium ion cells for safe use		Į P	
A.1	General	They must make my	Р	
A.2	Safety of lithium-ion secondary battery	at at the other	T <sup>P</sup> P	
A.3	Consideration on charging voltage	Complied.	Р	
A.3.1	General	# TEX JEX STEEL OUT	P	
A.3.2	Upper limit charging voltage	4.23V	Р	
A.3.2.1	General	THE STEE STEE STEE	Jr P	
A.3.2.2	Explanation of safety viewpoint	Mr. Mr. A.	N/A	
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	ALTER WALTER WALTER WALTER	ILL P V	
A.4	Consideration of temperature and charging current	the text little offer an	Por	
A.4.1	General	14 14 14 14	Р	
A.4.2	Recommended temperature range	See A.4.2.2	NP.	
A.4.2.1	General	A A A A A	Р	
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature declared by client is: 0-45°C.	ALTEK M	
A.4.3	High temperature range	Higher than the temperature range specific in this standard.	P OLI	
A.4.3.1	General	Mr. Mr. Mr. M.	Р	
A.4.3.2	Explanation of safety viewpoint	TEX TEX STEEL WITE	N/A	
A.4.3.3	Safety considerations when specifying charging conditions in high temperature range	AND AND AND AND AND	P	
A.4.3.4	Safety consideration when specifying new upper limit in high temperature range	45°C applied.	P	
A.4.4	Low temperature range	Lower than the temperature range specific in this standard.	P	
A.4.4.1	General	the alient nuties unlie wall	Р	
A.4.4.2	Explanation of safety viewpoint	The state of	N/A	
A.4.4.3	Safety considerations, when specifying charging conditions in low temperature range	WATER WATER WATER WATER	₩. P	
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	-5°C applied.	nti P W	
A.4.5	Scope of the application of charging current	et tet itet vitet is	Por	
A.4.6	Consideration of discharge	Mr. M. M.	Р	
A.4.6.1	General	e the the the str	Р	



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20,	IEC 62133-2:2017			
Clause	Requirement + Test	Result - Remark	Verdict	
ale.	THE THE METER WITH THE PARTY	MALTE WALL WALL	mr. m.	
A.4.6.2	Final discharge voltage and explanation of safety viewpoint	outek untilek ountilek	untiek ountiek	
A.4.6.3	Discharge current and temperature range		A P	
A.4.6.4	Scope of application of the discharging current	reter white white wh	A Prill	
A.5	Sample preparation	a at at a	H OF PUT	
A.5.1	General	MULL MULL MULL	P	
A.5.2	Insertion procedure for nickel particle to generate internal short	CLIEF MITER WALTER	WALTE WAR	
JALTEK W	The insertion procedure carried out at 20°C±5°C and under -25 °C of dew point	Tet still ottet	NETEK WITT P	
A.5.3	Disassembly of charged cell	10. 10. 10.	P	
A.5.4	Shape of nickel particle	TER CITER WITE MAI	AL BILL	
A.5.5	Insertion of nickel particle to cylindrical cell		N/A	
A.5.5.1	Insertion of nickel particle to winding core	E MITE MALL WALL	N/A	
A.5.5.2	Marking the position of nickel particle on the both ends of winding core of the separator	LIEF STEEL WITH	N/A	
A.5.6	Insertion of nickel particle in prismatic cell	W. Th.	ı, P	
A.6	Experimental procedure of the forced internal short-circuit test	The multi-	T V P VI	
A.6.1	Material and tools for preparation of nickel particle	The party spirit	NIL PL	
A.6.2	Example of a nickel particle preparation procedure	70° - 1	P.	
A.6.3	Positioning (or placement) of a nickel particle	WILLE WALLES WALLE	Wer Alb	
A.6.4	Damaged separator precaution	at at at	JEF JEP	
A.6.5	Caution for rewinding separator and electrode	Thris wir a	Р	
A.6.6	Insulation film for preventing short-circuit	let let liet w	In Live Park	
A.6.7	Caution when disassembling a cell	Any Any Any	Р	
A.6.8	Protective equipment for safety	ALTER OLITER MOLITE	uni uPin	
A.6.9	Caution in the case of fire during disassembling	711, 21, 7,	P.	
A.6.10	Caution for the disassembling process and pressing the electrode core	White white white	P	
A.6.11	Recommended specifications for the pressing device	TEK STEK OLICE	P	



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	IEC	62133-2:2017	
Clause	Requirement + Test	Result - Remark	Verdict

Annex D	Measurement of the internal AC resistance for coin cells	
D.1	General	N/A
D.2	Method	N/A
Annex E	Packaging and transport	P
Annex F	Component standards references	Р





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t A	BLE: Critical compo	nents informatio	n	at let	P.P
Object/part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity 1)
Cell	Mid Ocean Brands B.V.	801727	3.7V, 280mAh	IEC 62133-2: 2017	Test with appliance
Electrolyte	A A	et det	LiPF6	120 1V	- 40, 40,
Separator	- multipolitical	- 1/2 3	PP, PVDF, Shutdown temperature: 135°C.	ITH WALTER	White white
Positive electrode	White Militer Whi	-July Au	LiCoO <sub>2</sub> , Al foil	gl-	NIET WALTER
Negative electrode	NITEK WALTER WALTER	Marite Mari	Graphite, Cu foil	TEF	VIET NUTER N

Supplementary information:



<sup>1)</sup> Provided evidence ensures the agreed level of compliance.



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7.2.1 TABLE	E: Continuous charging at	constant voltage (cells)		P.
Model	Recommended charging voltage V <sub>c</sub> , (Vdc)	Recommended charging current I <sub>rec</sub> , (A)	OCV at start of test, (Vdc)	Results
801727 (C1#)	4.2	0.14	4.197	A,B
801727 (C2#)	4.2	0.14	4.196	A,B
801727 (C3#)	4.2	0.14	4.197	A,B
801727 (C4#)	4.2	0.14	4.198	A,B
801727 (C5#)	4.2	0.14	4.196	A,B

**Supplementary information:** 

A - No fire or explosion B - No leakage C - Leakage

D - Fire E - Explosion F - Others (please explain)

7.3.1 T	ABLE: I	External short circ	uit (cell)			L. b.
Mode	A LITER OF	Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (Ω)	Maximum case temperature rise ∆T, (°C)	Results
WITE WAL	in whi	Samples charged	at charging temp	erature upper lin	nit (45°C)	MULTI
801727 (	C6#)	55.4	4.200	0.084	112.9	A,E
801727 (0	C7#)	55.8	4.198	0.083	113.9	A,E
801727 (	C8#)	55.6	4.201	0.084	122.2	A,E
801727 (	C9#)	55.8	4.204	0.083	119.8	A,E
801727 (C	C10#)	55.4	4.208	0.084	121.4	A,E
mr m		Samples charged	d at charging temp	perature lower lin	nit (-5°C)	the.
801727 (C	C11#)	55.5	4.107	0.084	115.4	A,E
801727 (C	C12#)	55.8	4.098	0.088	114.8	A,E
801727 (C	C13#)	55.6	4.108	0.086	124.9	A,E
801727 (C	C14#)	55.8	4.108	0.087	123.8	A,E
801727 (C	C15#)	55.5	4.107	0.084	119.9	A,E

### **Supplementary information:**

A - No fire or explosion B - Fire C - Explosion D - The test was completed after 24 h

E – The test was completed after the cell casing cooled to 20% of the maximum temperature rise



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7.3.2	TABLE: Ext	ernal short circuit	(battery)			N/A
Model	Amb (°0	OT TOST	t Resistance of circuit, (Ω)	Maximum case temperatur e rise ∆T, (°C)	Component single fault condition	Results
	NEEK WELLEN	WALTER WALTER	Write Aug.	The Chi	Tet Clet	NUTER INC
- 184 .	CEF CIEN	alies writes whi	TY WATER	The Martin	The sile	
aur. au.	3000		t the i	EX WILLEY	lite While M	ir. Mur
		LIE NITE WILL	20, 20,		4 A	CH CEN

## Supplementary information:

- A No fire or Explosion B Fire C Explosion D The test was completed after 24 h
- E The test was completed after the cell casing cooled to 20% of the maximum temperature rise
- F The per cell voltage (series cells only) of the battery is below 0.8 V and is decreasing by less than 0.1 V in a 30-minute period.
- G In case of rapid decline in short circuit current, the battery pack should remain on test for an additional one hour after the current reaches a low end steady state condition.

7.3.5 TABLE: 0	Crush(Cell)		CE CEP	
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Results	
mr m os	amples charged at charging ten	nperature upper limit (45°C)	Mer. M	
801727 (C29#)	4.203	4.203	A S	
801727 (C30#)	4.200	4.199	A A	
801727 (C31#)	4.198	4.198	A A	
801727 (C32#)	4.201	4.200	А	
801727 (C33#)	4.200	4.199	A	
5	Samples charged at charging ter	mperature lower limit (-5°C)	10, 1	
801727 (C34#)	4.095	4.094	T A	
801727 (C35#)	4.101	4.098	Α	
801727 (C36#)	4.102	4.102	ALT	
801727 (C37#)	4.102	4.101	Α	
801727 (C38#)	4.097	4.096	Α	
Supplementary inform	ation:	Le Me Me Me	L .+	
A - No fire or explosion	B - Fire	C - Explosion		
D - Others (please expla	ain)			



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7.3.6	TABLE	TABLE: Over-charging of battery						
Constant c	onstant charging current (A):						ans.	
Supply vol	tage (Vd	C)	24.	129	it it it	1	J. 12/2	
Mod	lel white	OCV before charging, (Vdc)		Total charging me (min)	Maximum outer casing temperature, (°C)	F	Results	
	, et	THE LITTER STIFFE MILE	3	hr. Alex	211 211 211		, H	
witte	mer 1	he my m		LET JEY	LITER MITTER MALTE	. NO.	in whi	
<i>A</i> -	all the	THE LIFE MITTER MITTER	200	- m	711 211		- 11	
Wer W	V. 24	10 11	46	t like	STEEL WITE WILL.	Mary.	Mer	
	56th _55th	A WILLIAM THE WATER A		70, 1		et.	SEX	
Supplemen	ntary info	rmation:						
A - No fire o				C	- Explosion			

7.3.7	TABLE: Ford	ed discharge (cells)			20/E
MALTER.	Model	OCV before application of reverse charge, (Vdc)	Measured Reverse charge I <sub>t</sub> , (A)	Time for reversed charge, (minutes)	Results
8	01727 (C39#)	3.315	0.28	90	A
8	01727 (C40#)	3.323	0.28	90	A
8	01727 (C41#)	3.317	0.28	90	Α
8	01727 (C42#)	3.311	0.28	90	A C
8	01727 (C43#)	3.298	0.28	90	Α

**Supplementary information:** 

A - No fire or explosion B - Fire C - Explosion

D - Others (please explain)

7.3.8.1	TABLE	: Vibration			TER WHITE WAL	N/A
Model		OCV (V) Mass of Test Battery (g)				
		Before test	After test	Before test	After test	Result
NLTEK ON	ITEM MALT	MULLI MULL	in in	t let let	wifet nitet	N.L.T.E.F.
	t lit	TEX TIEK N	THE MUTTER MUTT	mer mer	20, 20, 2	
ANT.	Augr	in in	et tet tet	ALTER OLITER AN	LIEN WALLE WAS	MULL

## Supplementary information:

- A- No Fire, No Explosion, No rupture, No Leakage or venting
- B- Others



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7.3.8.2 TABLE	E: Michanical shock	C A AT			N/A
Et a Et	OCV (V) Mass of Test Battery (g)				Desuit
Model	Before test	After test	Before test	After test	Result
LIER MITER MITE	MULL MULL	ur m	at the test	LIEK NITEK	NITER WAL
at the last	TEX LIER N	iek wiek wi	Mur. Mur.	m m a	
Will Mr.	21/2 21/2 21/2	1 1 A	TEK STEK	LIER WALTER WA	in Murri

### Supplementary information:

A- No Fire, No Explosion, No rupture, No Leakage or venting

**B-Others** 

7.3.9 TAB	LE: Forced intern	al short circuit (cell	s)		N/A
Model	Chamber ambient, (°C)	OCV at start of test, (Vdc)	Particle location 1)	Maximum applied pressure, (N)	Results
801727 (C44#)	45	4.198	until with	400	A
801727 (C45#)	45	4.201	1 1	400	A.C.
801727 (C46#)	45	4.199	100 100	400	Α
801727 (C47#)	45	4.202	1.4	400	Α
801727 (C48#)	45	4.198	<sup>500</sup> 1 3	400	Α
801727 (C49#)	-5	4.089	dt 1000	400	A LINE
801727 (C50#)	-5	4.092	w1 w	400	Α
801727 (C51#)	-5	4.085	- <u>1</u> 61 56	400	and And
801727 (C52#)	-5	4.094	3 <sup>12</sup> 1 3 <sup>11</sup>	400	A A
801727 (C53#)	-5	4.093	76th 1 15th	400	Α

## Supplementary information:

A - No fire B - Fire C - Others (please explain)

<sup>1)</sup> Identify one of the following:1: Nickel particle inserted between positive and negative (active material) coated area.

<sup>2:</sup> Nickel particle inserted between positive aluminium foil and negative active material coated area.

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# Attachment 1 Photo Documentation

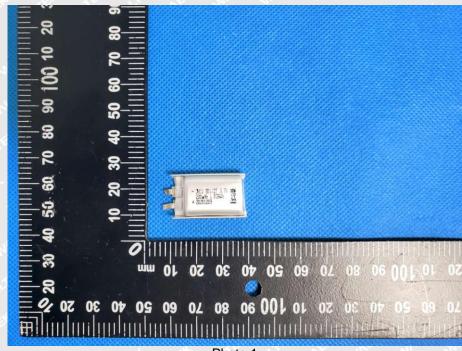
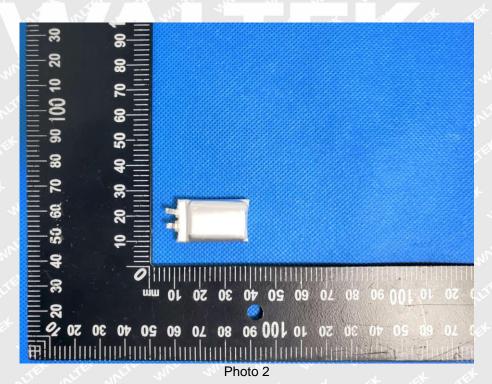


Photo 1



===== End of Report ======