

Report No.: SZABB190506015-01

# APPLICATION FOR LOW VOLTAGE DIRECTIVE REPORT

Client	Name	- 17

Address :

Product Name : Wireless Power Bank 5000mAh

Date : May. 24, 2019

**Shenzhen Anbotek Compliance Laboratory Limited** 

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#### **TEST REPORT**

#### EN 62133-2: 2017

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

Reference No. .....: SZABB190506015-01

Compiled by (+ signature) ...... Fannie Zhu / Project Engineer ...

Approved by (+ signature) ...... Jeff Zhu / Project Manager

Date of issue .....: May. 24, 2019

Testing laboratory

Name ...... Shenzhen Anbotek Compliance Laboratory Limited

Address ...... East of 4/F., Building A, Hourui No.3 Industrial Zone, Xixiang

Street, Bao'an District, Shenzhen, Guangdong, China

Fannie Zhu

Compliance Labo

**Anbotek** 

Testing location .....: Shenzhen Anbotek Compliance Laboratory Limited

Client

Name .....

Address .....

Test specification

Standard.....: EN 62133-2: 2017

Test procedure .....: Compliance with EN 62133-2: 2017

Non-standard test method .....: N.A.

Test item

Description ...... Wireless Power Bank 5000mAh

Trademark .....:

Model and/or type reference.....: SW50, P324.58

Manufacturer .....: Same as applicant

Address ..... : Same as applicant

Factory....: Same as applicant

Address .....: Same as applicant

Rating(s) ...... 3.7V, 5000mAh, 19.24Wh

Type-C Input: 5V/2A

USB Output: 5V/2A

Wireless Output: 5V/1A

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#### Particulars: test item vs. test requirements

Ambient temperature·····: 20°C ± 5°C.

Test case verdicts

Test case does not apply to the test object ······: N (.A.)

Test item does meet the requirement ...... P (ass)

Test item does not meet the requirement ...... F (ail)

Testing

Date of receipt of test item ...... May. 06, 2019

#### **General remarks**

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

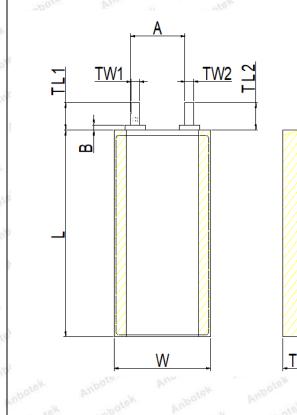
The test results presented in this report are only relevant to the test sample.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a dot is used as the decimal separator.

#### Construction



Item	Specifications
For I'm	≤7.0mm
W	≤60.0mm
PEDO.	≤90.5mm
TL1/TL2	10.0±1.0mm
TW1/TW2	4.0±0.2mm
A South	38.0±2.0mm
В	0.2~2.0mm
- 17	360 6

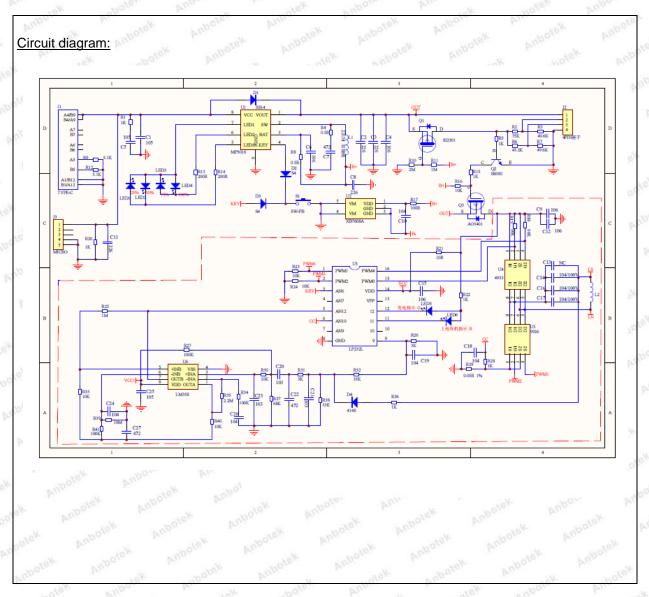
Cell

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#### Copy of marking plate:

The artwork below may be only a draft.

Wireless Power Bank 5000mAh

P324.58 1ICP7/60/91

3.7V, 5000mAh, 18.5Wh

Type-C Input: 5V/ 2A USB Output: 5V/ 2A

Wireless Output: 5V/ 1A

Shenzhen U-Angel Technology Co., Ltd.

2019. 04.25

Wireless Power Bank 5000mAh

SW50 1ICP7/60/91

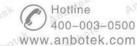
3.7V, 5000mAh, 18.5Wh

Type-C Input: 5V/ 2A USB Output: 5V/ 2A

Wireless Output: 5V/ 1A

Shenzhen U-Angel Technology Co., Ltd.

2019. 04.25





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#### General product information and other remarks:

This battery is constructed with one lithium-ion cell (1S1P), and has overcharge, over-discharge, over-current and short-circuits proof circuit.

The main features of the battery are shown as below (clause 7.1.1):

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Final Voltage
P324.58	5000mAh	5.0V	2000mA	2000mA	2000mA	2000mA	5.25V	3.0V*

The main features of the cell in the battery are shown as below (clause 7.1.1):

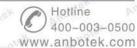
Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Final Voltage
706090P	5000mAh	3.7V	1000mA	1000mA	2500mA	2500mA	4.2V	3.0V

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

Model	Upper limit charge voltage	Taper-off current	Lower charge temperature	Upper charge temperature
706090P	4.2V	250mA	10°C	45°C

#### Remark:

\*: The Cell Voltage





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	101			
	EN 62133-2: 2017			
Requirement + Test	abotek Anbol	Result - Remark	Antrotak	Verdict
	Antiotes Anti-	EN 62133-2: 2017	EN 62133-2: 2017	EN 62133-2: 2017

4	PARAMETER MEASUREMENT TOLERANCES				1/0
Molek	Parameter measurement tolerances	by.	Mipole	Pun	P

5	GENERAL SAFETY CONSIDERATIONS		abolek
5.1	General	Antrole Ann	Potel
& Anhor	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse	tek Aupotek Aupotek	P <sub>Aribe</sub>
5.2	Insulation and wiring	* Upolek Vupor V	ote*P
Anbotek bote	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 $M\Omega$	No metal case exists.	Nappolek Ambolek
bar.	Insulation resistance (MΩ):	Pun alek Pupalek	_
orek bu	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements	Anbotek Anbotek Anbot	otok P
upo potok	Orientation of wiring maintains adequate clearance and creepage distances between conductors	Vupor Vo	into P
Aupata	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		Р
5.3	Venting	, W 40V	P
notek A	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	Venting mechanism exists on the narrow side of pouch cell.	ntek P
Anbotak	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief	IX Anbotek Anbotek	ATTP Anbot
5.4	Temperature, voltage and current management	on he rotek subole	P №
bote <sup>K</sup> Anbote <sup>K</sup>	Batteries are designed such that abnormal temperature rise conditions are prevented	Overcharge, over discharge, over current and short-circuit proof circuit used in this battery. See tests of clause 7.	upotek
Anbotos	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	See above.	PARTOR
ak Ar patek Ambatek	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified	The charging limits specified in the user manual.	lek P

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	EN 62133-2: 2017			
No.	211 02 100 2. 2011	K mola	ATH	101
rement + Test	abotok Anbot	Result - Remark	nbolok	Verdict
I	rement + Test	rement + Test	rement + Test Result - Remark	rement + Test Result - Remark

5.5	Terminal contacts	Micro-USB used. see page 5.	P V
otok p	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Micro-USB complied with the requirements.	ante/P
Anbotok Anbotok	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	Anbotak Anbotak	AnboP <sup>th</sup> Anbotek
k Anh	Terminal contacts are arranged to minimize the risk of short-circuit	clek Anbolok Anbolok	P <sub>Anto</sub> o
5.6	Assembly of cells into batteries	un tak supploy bupo,	N
5.6.1	General	Vupa *** ***** Vu	N
Anbotek Anbotek	Each battery have an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region	ak Anbotek Anbotek	Anbolek Anbolek
ite <sub>k</sub> to	This protection may be provided external to the battery such as within the charger or the end devices	potek Anbotek Anbote	K N PL
Anbotek Anbotek	If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation	Anbotek Anbour An	, nbolN
tek Anbo	If there is more than one battery housed in a single battery case, each battery have protective circuitry that can maintain the cells within their operating regions	Autotek Autotek Auto	N And
Aupotek Pupotek	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly	Current, voltage and temperature limits specified by cell manufacturer.	nbouP Anbotek
Anbot An	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	otek Anbotek Anbotek	P <sup>rob</sup>
Anbotek Anbotek	Protective circuit components added as appropriate and consideration given to the end-device application	Anbotek Anbotek	nboteP Anbotek
Ambari Ambari	The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance	Safety analysis report provided by the manufacturer.	P <sub>A</sub> nbote Ant
5.6.2	Design recommendation	PUBOLO, PULL	10010P

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MATOR	Muhor Mu	EN 62133-2: 2017	r woley Vupote.	Pun.
Clause	Requirement + Test	abotek Anbote	Result - Remark	Verdict
antotak An	For the battery consisting of a cellblock, it is recommended voltage of the cell does not exthe charging voltage specified	that the charging cceed the upper limit of	Charging voltage of each cellblock: 4.20V, not exceed the upper limit of the charging voltage 4.20V specified in Table 2.	ok P
Ambotek Ambotek Amboti otek Amb	For the battery consisting of single cells or series-connector recommended that the voltage single cells or single cellblock upper limit of the charging voltable 2, by monitoring the volcell or the single cellblocks	ed plural cellblocks, it is es of any one of the is does not exceed the tage, specified in	tok Anbotek Anbotek  (botek Anbotek Anbotek  Anbotek Anbotek Anbotek  Anbotek Anbotek	Notel Acti Acti Acti Acti Acti Acti Acti Acti
Anbotek Anbotek Anbotek	For the battery consisting of single cells or series-connector recommended that charging is upper limit of the charging volume one of the single cells or measuring the voltage of ever single cellblocks	ed plural cellblocks, it is s stopped when the tage is exceeded for single cellblocks by	Anbotek Anbotek  Anbotek Anbotek  Betak Anbotek Anbotek  Anbotek Anbotek	Anthores Anthores
nbotek pu	For batteries consisting of ser cell blocks, nominal charge vo as an overcharge protection		Anbotek Anbotek Ant	N
Anbotek Anbotek	For batteries consisting of ser cell blocks, cells have closely be of the same design, be of and be from the same manufa	matched capacities, the same chemistry		N
ipotek Vup	It is recommended that the co- discharged beyond the cell m final voltage		Final voltage of battery: 3.0V, not exceed the final voltage specified by cell manufacturer.	otek P
Ambotek Ambotek	For batteries consisting of ser cell blocks, cell balancing circ the battery management syst	cuitry incorporated into	Anbotek Anbotek	N.e <sup>8</sup>
5.6.3	Mechanical protection for cell batteries	s and components of	lotek Anbotes Anbote	P
hotek A	Mechanical protection for cell control circuits within the batte damage as a result of intende foreseeable misuse	ery provided to prevent	Anbotek Anbotek Anb	nbotek nbotek
Amborek Amborek	The mechanical protection ca battery case or it can be prov product enclosure for those b building into an end product	ided by the end	otek Anbotek Anbotek Anbotek Anbotek	Panbok
patek Ar	The battery case and compar designed to accommodate ce tolerances during charging ar recommended by the cell ma	ell dimensional and discharging as	Anbotek Anbotek Anbotek Anb	p potek

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No to the	EN 62133-2: 2017	ok wolek Anbolen	Vup.
Clause	Requirement + Test	Result - Remark	Verdict
Buch	ale motals Andre An arek and	oles Wills	PLUP C
otek Antr	For batteries intended for building into a portable end product, testing with the battery installed within the end product considered when conducting mechanical tests	Anbotek Anbotek Anbotek Anbo	BOTOL N
5.7	Quality plan	Yun Tak "Tholek	Aupola
Anbotek Anbotek	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	ctek Anbotek Anbotek Anbotek Anbotek Anbotek	NP Antro
5.8	Battery safety components	Vubon My Polek Vi	P
Upp.	According annex F	Vupor bus motey	anto P

6	TYPE TEST AND SAMPLE SIZE		hos.
stell NS	Tests are made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old	botek Anbotek Anbote	k Prin
mbolek	Coin cells with resistance ≤ 3 Ω (measured according annex D) are tested according table 1	Anbotek Anbotek An	N
Antione	Unless otherwise specified, tests are carried out in an ambient temperature of 20°C ± 5°C	Tests are carried out at 20°C ± 5°C.	Р **
nek pr	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and overdischarge protection	Ambotek Anbotek Anbot	P Mills
Anbotek Anbotek	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	Anbotek Anbotek	Anbotek

7	SPECIFIC REQUIREMENTS AND TESTS		dra
7.1	Charging procedure for test purposes	Lithium system.	NEW P
7.1.1	First procedure	"Totak Vupose Vue	P
Anbotek eak	This charging procedure applies to subclauses other than those specified in 7.1.2	Vilpotek Vilpotek	Anholek Anholek
aribo	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	otek Anbotek Anbotek	Proofe Anh
patek a nbotek	Prior to charging, the battery have been discharged at 20°C ± 5°C at a constant current of 0,2 lt A down to a specified final voltage	Anbotek Anbotek Anb	,bole P
7.1.2	Second procedure	K. Motely Bupotes	Acrie P
han Anha	tek Compliance Laboratory Limited	Code: AB-BA	\T-38-a

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ABLOOP.	EN 62133-2: 2017	ak moley Anhola	PD. 104
Clause	Requirement + Test	Result - Remark	Verdict
Box	alk motor Anthon Lotok at	thore Am and motols	ATT DE
	This charging procedure applies only to 7.3.1, 7.3.4 7.3.5 and 7.3.9	Anbotek Anbotek Anbo	N P
Anbotok Anbotok Anbotok	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	Charge temperature 10-45°C declared.	Aupotek Vanpotek Vanpotek
7.2	Intended use	Vigo	Р 🥍
7.2.1	Continuous charging at constant voltage (cells)	Test complied.	Р
Vupotek Vupotek	Fully charged cells are subjected for 7 days to a charge using the charging method for current and standard voltage specified by the cell manufacturer	ak Anbotak Anbotak	Antiolek Antiolek
Piller	Results: No fire. No explosion. No leakage	.: (See appended table 7.2.1)	Pulpa,
7.2.2	Case stress at high ambient temperature (battery)	Tested complied.	F P PO
Property Property	Oven temperature (°C)	.: 70°C	_
nbotek Anbotok	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells	No physical distortion of the battery casing resulting in exposure of internal components	P
7.3	Reasonably foreseeable misuse		Р
7.3.1	External short-circuit (cell)	ATT	P M
mote <sub>k</sub> Vu	The cells were tested until one of the following occurred:	Anbolek Anbolek Anb	est P
-otek	- 24 hours elapsed; or	Arm and ambatak	N
Anbotek	- The case temperature declined by 20 % of the maximum temperature rise	othy Ambotok Ambotok	Pulbor
Anboth	Results: No fire. No explosion	(See appended table 7.3.1)	Р
7.3.2	External short-circuit (battery)	the Pupoles Vibores	P P
bole <sup>k</sup>	The batteries were tested until one of the following occurred:	Ambotok Ambotok Anti	P
Anboro	- 24 hours elapsed; or	K Vilpoyo, Vun.	Nok
Anboto	- The case temperature declined by 20 % of the maximum temperature rise	otek Autorek Amodek	Note
ak Anb	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	upotek Amotek Anbote	P Puth

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Motor	EN 62133-2: 2017	K Hotek Antioles	PUR.
Clause	Requirement + Test	Result - Remark	Verdict
iatak b	A single fault in the discharge protection circuit conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test	Single fault conducted on two samples.	P Ar
Anbatak Anbatak	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor	Single fault applies on MOSFET (U4), see appended table 7.3.2.	Anbotek Anbotek
h 101	Results: No fire. No explosion:	(See appended table 7.3.2)	Panton
7.3.3	Free fall	Tested complied.	P M
Ore by	Results: No fire. No explosion	No fire. No explosion	ote <sup>N</sup> P
7.3.4	Thermal abuse (cells)	Tested complied.	P P
Milholow	Oven temperature (°C):	130°C	_
anhoten	Results: No fire. No explosion	No fire. No explosion	Р
7.3.5	Crush (cells)	Tested complied.	P
iel.	The crushing force was released upon:	box hotek Aupon	P Pro
nbotek	- The maximum force of 13 kN $\pm$ 0,78 kN has been applied; or	Anbotek Anbotek Ant	o <sup>tolik</sup> P
Anborok	- An abrupt voltage drop of one-third of the original voltage has been obtained		N ®
P <sub>U</sub>	Results: No fire. No explosion:	(See Table 7.3.5)	Р
7.3.6	Over-charging of battery	Tested complied.	P put
Fo.	The supply voltage which is:	- Opolok Vupose Vupo	New P
anbotek Anbotek	- 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	6V applied.	mbol P
Anbotas	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and	otek Anbotek Anbotek	Nanbote
lok ku	- Sufficient to maintain a current of 2,0 lt A throughout the duration of the test or until the supply voltage is reached	inbotek Anbotek Anb	notek P
Anbotek	Test was continued until the temperature of the outer casing:	Ambotek Ambo	Plak Authorak
Anbor	- Reached steady state conditions (less than 10°C change in 30-minute period); or	stek Ambolek Anbolek	Poore
100 40	- Returned to ambient	otek supotek Aupore	N
ntek.	Results: No fire. No explosion:	(See appended table 7.3.6)	Р
7.3.7	Forced discharge (cells)	Tested complied.	oo'e P

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No to tak	EN 62133-2: 2017	K Polok Autoley	Vupo.
Clause	Requirement + Test	Result - Remark	Verdict
ik bus	If the discharge voltage reaches the negative value	otes Anbotes Anbotes	N N
kapatak kapatak	of upper limit charging voltage within the testing duration, the voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration	Ambotek Anbotek Anbo	aatek Anbotek
Anboro	If the discharge voltage does not reach the negative value of upper limit charging voltage within the	Anbota Anbotak	Potek

Anhoton . K	the current for the remainder of the testing duration	Anhotek Anhov nek A	a nbalak
Anbote Anbotek	If the discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration, the test is terminated at the end of the testing duration	lek Anbalek Anbalek	Potek Anbol
atak an	Results: No fire. No explosion:	(See appended table 7.3.7)	Р 💯
7.3.8	Mechanical tests (batteries)	Aupo ak spotek Wil	P
7.3.8.1	Vibration	Tested complied.	Anto P
Vupo apotek	Results: No fire, no explosion, no rupture, no leakage or venting:	(See appended table 7.3.8.1)	Ar Polen
7.3.8.2	Mechanical shock	Tested complied.	P
stell leur	Results: No leakage, no venting, no rupture, no explosion and no fire:	(See appended table 7.3.8.2)	D bu
7.3.9	Design evaluation – Forced internal short-circuit (cells)	Not request by client, not complied with national requirement for France, Japan, Republic of Korea and Switzerland.	N N
BUBBL	The cells complied with national requirement for:	2° 1 - 1 - 10°	_
ret Put	The pressing was stopped upon:	shotek Anbotes And	N
bolek	- A voltage drop of 50 mV has been detected; or	Wotok Aupolan And	N
Anbotek	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	Anbotek Anbotek	N shbotek

8	INFORMATION FOR SAFETY		P ₩ <sub>U</sub>
8.1	General		P P
Anborek	Manufacturers of secondary cells ensure that information is provided about current, voltage and temperature limits of their products	Anbotek Anbotek	opoteb Vilhorek
ant ant	Manufacturers of batteries ensure that equipment manufacturers and, in the case of direct sales, endusers are provided with information to minimize and mitigate hazards	otek Anbotek Anbotek Anbotek Anbotek	Roose Anb
patek Anbotek	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product	Anbotek Anbotek Anbotek	hole N Anbotek

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Code: AB-BAT-38-a

N

Results: No fire .....:



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MATORIA	EN 62133-2: 2017	W Polek Willow	Pun.	
Clause	Requirement + Test	Result - Remark	Verdict	
Barre	ank another Antibe and	note Ame and more	dring	
otek Ara	As appropriate, any information relating to hazard avoidance resulting from a system analysis provided to the end user	Anbotek Anbotek Anbo	ek N	
Antique	Do not allow children to replace batteries without adult supervision	Anbotek Anbotek As	AUDON'A	
8.2	Small cell and battery safety information	Not small cell and battery.	N	
k Anbo	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:	Anbotek Anbotek Anbotek	N <sub>e</sub> nol	
apolok bi	- Keep small cells and batteries which are considered swallowable out of the reach of children	Anbatek Anbatek An	ote <sup>N</sup> N	
Anbotek anbotek	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion	ek Anbotek Anbotek	Anbole!	
Anbol	- In case of ingestion of a cell or battery, seek medical assistance promptly	botok Anbotok Anboto	N	

9	MARKING		P
9.1	Cell marking	Vun Hay	ruporn (
Anbote	Cells marked as specified in IEC 61960, except coin cells	The final product is battery	N
not but	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity	abolek Anbolek Anbol	N Ant
abotek Anbotek	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	Anbotek Anbotek An	nbote <sup>k</sup>
9.2	Battery marking	or Aupa tek apolek	P/gorg
rok Pur	Batteries marked as specified in IEC 61960, except for coin batteries	otek Anbotek Anbote	P pub
botek Anbotek	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement	Anbotek Anbotek Anbotek	Anbotek Anbotek
ARDO	Terminals have clear polarity marking on the external surface of the battery	otek Vupolek Vupor	P
patek Anbatek	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	Anbotek Anbotek Anbotek Anbotek	bolek Anbatek

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rtcport	140 02/100100010 01	No.	357	i age	10 01 20
Notok.		EN 62133-2: 2017			
Clause	Requirement + Test	abotek Anbot	Result - Remark	Anhotok	Verdict

9.3	Caution for ingestion of small cells and batteries	Not small cell and battery.	. N
anbotok Anbotok	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	Ambotek Ambotek Andrew Andrew Andrew	N N
Anboi Anboi	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package	tok Anbotek Anbotek	N N
9.4	Other information	Molay Wipagas War	, VP
"polok	Storage and disposal instructions	Van Publice Vil	P
Ambotek Ambot	Recommended charging instructions	Information for recommended charging instructions mentioned in manufacturer's specifications.	Ambronar Ambro

10	PACKAGING AND TRANSPORT		nak h
nbotek	Packaging for coin cells not small enough to fit within the limits of the ingestion gauge of Figure 3	Not coin cells.	N
Anbala	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		P **

ANNEX A	FOR SAFE USE		otek ok
A.1	General	Ar. atak anbolok	P.A
A.2	Safety of lithium ion secondary battery	Complied.	P.II.B
A.3	Consideration on charging voltage	Complied.	P√o <sup>c</sup>
A.3.1	General	Charging voltage is 4.2V	P
A.3.2	Upper limit charging voltage	4.2V	Jan P
A.3.2.1	General	"Ipotok Vipos Vi	P
A.3.2.2	Explanation of safety viewpoint	Thotak Bulborn b	N
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	4.2V applied.	N Anbo
A.4 MIDE	Consideration of temperature and charging current	otek Anbotak Anbotak	P
A.4.1	General	Tunn tok Spotak Wapo	Р
A.4.2	Recommended temperature range	See A.4.2.2.	looke B
A.4.2.1	General	Autor K Mater	NO P

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-wotak	EN 62133-2: 2017	K wotak Antroles	Par
Clause	Requirement + Test	Result - Remark	Verdict
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature declared by client is: 10-45°C	pt N
A.4.3	High temperature range	No higher than the temperature range specific in this standard.	N
A.4.3.1	General	Vupan Vu	Nove
A.4.3.2	Explanation of safety viewpoint	tale William Protok	Nanti
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range	potek Anbotek Anbot	N ,
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range	Anbotek Anbotek An	N
A.4.4	Low temperature range	No lower than the temperature range specific in this standard.	N <sub>otel</sub> Ambolel
A.4.4.1	General	Vunnaries Pubolos	Napa
A.4.4.2	Explanation of safety viewpoint	Dology William Fork Whole	N
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range	Amborek Ande	ora <sub>K</sub> N
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	Notes	N A
A.4.5	Scope of the application of charging current		N
A.4.6	Consideration of discharge		N
A.4.6.1	General	otek vupotek Vupon	N
A.4.6.2	Final discharge voltage and explanation of safety viewpoint	Publish Viporak Vup	N
A.4.6.3	Discharge current and temperature range	Puposey, Muoo	Nuch
A.4.6.4	Scope of application of the discharging current	y ambotok Amboto	N
A.5	Sample preparation	stek supotek supos	N
A.5.1	General	stek spotek Anbore	N
A.5.2	Insertion procedure for nickel particle to generate internal short	Authorak Wilholay Wuh	N
A.5.3	Disassembly of charged cell	VIROLES VIDOS V	New
A.5.4	Shape of nickel particle	k anhotek Anhote	N
A.5.5	Insertion of nickel particle in cylindrical cell	Toy Papoles Pupole	N
A.5.5.1	Insertion of nickel particle in winding core	nk motak Vupata	N
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator	Cupotek, Waspatek, Walter	N N
A.5.6	Insertion of nickel particle in prismatic cell	notek Anbore A	N

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EN 62133-2: 2017  Clause Requirement + Test Result - Remark Ve	- ROPOIT I	10 02/1000000010 01	201	207	. ago	17 01 20
Clause Requirement + Test Result - Remark Ve	Natotek.		EN 62133-2: 2017			
MO	Clause	Requirement + Test	abotek Anbot	Result - Remark	Antrotok	Verdict

A.6	Experimental procedure of the forced internal short-circuit test	abotek Anbote Anno	N N
A.6.1	Material and tools for preparation of nickel particle	Antion A motest ar	pota, N
A.6.2	Example of a nickel particle preparation procedure	Author All marek	N
A.6.3	Positioning (or placement) of a nickel particle	Muhata Muh	Notes
A.6.4	Damaged separator precaution	lak Yupata, Yupa	N
A.6.5	Caution for rewinding separator and electrode	wotek Anbotok Anbo	N
A.6.6	Insulation film for preventing short-circuit	otak eupotak trupo	N
A.6.7	Caution when disassembling a cell	Ann tek subotek An	N
A.6.8	Protective equipment for safety	Vunn rek rapotek	N°day
A.6.9	Caution in the case of fire during disassembling	Kuph whotek	<sub>M</sub> N <sup>ove</sup>
A.6.10	Caution for the disassembling process and pressing the electrode core	etak Aubotak Aubotak	Nation
A.6.11	Recommended specifications for the pressing device	Aupotek Aupotek Aupo	otak N by

9	ANNEX B	RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY	P E
		ASSEMBLERS	

# ANNEX C RECOMMENDATIONS TO THE END-USERS P

ANNEX D	MEASUREMENT OF THE INTERNAL AC RESISTA	NCE FOR COIN CELLS	N Yes
D.1	General	Pupping Villa.	N
D.2	Method	ahatak kabasa k	New
Anbotek	A sample size of three coin cells is required for this measurement	(See appended table D.2)	Anbot Anbot
tok kup	Coin cells with an internal resistance of less than or equal to 3 $\Omega$ are subjected to the testing according to Clause 6 and Table 1	anbotek Anbotek Anbotel	N M
both	Coin cells with an internal resistance greater than 3 $\Omega$ require no further testing	Antiotoli Antiotek A	Notice

	ANNEX E	PACKAGING AND TRANSPORT	Papote
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	ANNEX F	COMPONENT STANDARDS REFERENCES	P
w			1.76

Code: AB-BAT-38-a

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MUDO	TABLE: List of critic	al components			otoV Panbots
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity <sup>1</sup> )
Cell	Guangdong Miyear Technology Co.,LTD	706090P	3.7V, 5000mAh	EN 62133-2: 2017	Test with appliance

<sup>1)</sup> An asterisk indicates a mark which assures the agreed level of surveillance.

7.2.1	TABLE: Continuous cha	Р		
Sample No.	Recommended charging voltage V <sub>c</sub> , (Vdc)	Recommended charging current I <sub>rec</sub> , (mA)	OCV at start of test, (Vdc)	Results
C1	4.20	1000	4.18	Polek
C2	4.20	1000	4.18	P motel
СЗ	4.20	1000	4.18	P
C4	4.20	1000	4.18	Potes P Man
C5	4.20	1000	4.18	Pupoga b M

#### Supplementary information:

- No fire or explosion
- No leakage

7.2.2	TABLE: Moulded case stress at high	ambient temperature (battery)	Р
Sample No.	Ambient, (°C)	OCV at start of test, (Vdc)	Results
B20	70±2	5.17	Pr.
B21	70±2	5.02	Potelk
B22	70±2	5.11	P P woter

#### **Supplementary information:**

- No fire or explosion
- No leakage
- Others (please explain)



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7.3.1	TABLE: External	short circuit (cell)			Р
Sample No.	Ambient T(°C)	OCV at start of test, (Vdc)	Resistance of circuit, (mΩ)	Maximum case temperature, (°C)	Results
Charging ten	nperature:10°C	Vupore b	ne delle antici	EN MUDO	Pr. Hotak
C6	55.2	4.18	82.5	103.5	Politik Pinolek
C7	55.2	4.18	86.1	98.1	P
C8	55.2	4.18	93.4	104.8	P <sub>FUO</sub>
C9	55.2	4.18	75.6	100.2	holos P A
C10	55.2	4.18	83.2	103.6	*Upotes B
Charging ten	nperature: 45°C	brupa	spotek Aupon	Pun Vek	anbotek.
C11	55.36	4.14	90.60	102.70	Potek
C12	55.36	4.13	82.20	100.90	P no
C13	55.36	4.13	76.50	95.50	Р
C14	55.36	4.14	83.70	98.10	P
C15	55.36	4.13	86.40	108.80	Antion P

7.3.2	TABLE: Ex	Р				
Sample No.	Ambient T, (°C)	OCV before test, (Vdc)	Resistance of circuit, (mΩ)	it, temperature, single fault		Results
pote <sup>K</sup> B1 An	22.5	5.04	85.2	23.1	k Vuboru.	Active P
B2	22.5	5.03	77.9	22.9	otel - Noboles	PP val
В3	22.5	5.08	74.5	22.8	today Yata	P
B4	22.5	5.15	86.1	23.1	S-C MOS (U4)	Joles P Mupo
B5	22.5	5.07	93.7	22.9	S-C MOS (U5)	nbotell P M

# **Supplementary information:**

- No fire or explosion
- Others (SC=Short circuit)



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7.3.3	TABLE: Free	TABLE: Free fall					Р		
Sample No.	OCV at start of test, (Vdc)			OCV at removal of thermal free fall, (Vdc)			Results		
C16	Cen Pupo	4.18	holek p	ipole.	4.17	- abolek	Anho P		
C17	Pup.	4.17	motel.	Nupotes	4.17	apolek.	Pup.b.		
C18	"Aproje b	4.18	bran otek	anbater.	4.17	, hole	Poole		
B6	P. Patek	5.16	Villa.	otho.	5.16	Pro-	col P <sub>lan</sub> bo		
B7	Pro Potak	5.04	PULL	-70	5.04	in but	GOLOV P		
B8	A box	5.08	tas, but	-8W	5.18	upora p	P		

## Supplementary information:

- No fire or explosion

7.3.4	TABLE: Thermal abuse	(cells)		Р	
Sample No.	OCV at start of test, (Vdc)	Ambient T, (°C)	Temperature raised at a rate, (°C)	Results	
Charging ten	nperature:10°C	notel Anboten	rupo rok upolok	Antioto K	
C19	4.13	130±2	5°C/min	Putab.	
C20	4.14	130±2	5°C/min	Pola	
C21	4.13	130±2	5°C/min	Р	
C22	4.13	130±2	5°C/min	Р	
C23	4.13	130±2	5°C/min	Р	
Charging ten	nperature: 45°C	Jotok Kupo	Hotek Andore	Puo.	
C24	4.18	130±2	5°C/min	And P alk	
C25	4.18	130±2	5°C/min	Þ/P	
C26	4.18	130±2	5°C/min	Bugger	
C27	4.18	130±2	5°C/min	jotek P knoc	
C28	4.18	130±2	5°C/min	MOTOR P	

#### Supplementary information:

- No fire or explosion



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7.3.5	TABLE: Crush (cells)	TABLE: Crush (cells)					
Sample No.	OCV before test, (Vdc)	OCV at removal of crushing force, (Vdc)	Maximum force applied to the cell during crush, (kN)	Results			
Charging ten	nperature: 10°C	upote Mu. Wey	Anborek Anbo	Pi Holak			
C29	4.14	4.11	13.3	Por Pirotak			
C30	4.13	4.11	13.1	P			
C31	4.13	4.11	13.2	P <sub>FUO</sub>			
C32	4.13	4.11	13.1	Polos B Vul			
C33	4.13	4.11	13.4	anbote P			
Charging ten	nperature: 45°C	ing say spotely	Anbore Ann otek	ambotek.			
C34	4.18	4.15	13.1	Potek			
C35	4.19	4.15	13.4	el P stole			
C36	4.18	4.15	13.3	P			
C37	4.18	4.14	13.1	b by			
C38	4.18	4.16	13.3	sintrolla P			

TABLE: Over-charging of	battery			Р
rging current (A)	:		10	_
e (Vdc)	:	Ann niek6 Anbetek -		_
Sample No. OCV before charging, (Vdc)				Results
5.08	210	watak.	36.2	P Hotel
5.03	210	Plus	38.4	P
5.08	210	Fun	37.2	P Post
5.14	210	84	37.6	Aribon P An
5.10	210	100	38.6	anbol P
ľ	rging current (A)	(Vdc)     (minute       5.08     210       5.03     210       5.08     210       5.14     210	rging current (A):  e (Vdc):  OCV before charging, (Vdc)  5.08  210  5.03  210  5.08  210  5.08  210  5.08  210	rging current (A)

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7.3.7	TABLE: Forced discharg	Р			
Sample No.	OCV before application of reverse charge, (Vdc)	Measured reverse charge I <sub>t</sub> , (A)	Lower limit discharge voltage, (Vdc)	Results	
C39 3.35		5	3.00	P. Pek	
C40	3.35	Anbore 5 Anh	3.00	P. P. olek	
C41	3.34	Ambotol 5 Ambo	3.00	P	
C42	3.35	Anbole 5 Anbo	3.00	P <sub>Fuo</sub>	
C43	3.36	ak anb 5 ak	3.00	poton B Mup	

#### Supplementary information:

- No fire or explosion

7.3.8.1	TABLE: Vibration	otak Anhotan	Pupp.	P P coley		
Sample No.	OCV before test, (Vdc)	OCV after test, (Vdc)	Mass before test, (g)	Mass after test, (g)	Results	
B14	5.09	5.08	166.186	166.175	"OLONP	
B15	5.03	5.03	166.845	166.838	Pie	
B16	5.10	5.10	165.606	165.601	Park Parek	

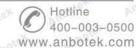
## Supplementary information:

- No fire or explosion
- No rupture
- No leakage
- No venting

7.3.8.2	TABLE: Mechanic	al shock		otok anbotan	Kno P		
Sample No.	OCV before test, (Vdc) OCV after test, (Vdc)		Mass before test, (g)	Mass after test, (g)	Results		
B17	5.04	5.04	166.303	166.297	Nev P Noon		
B18	5.14	5.13	164.838	166.834	P		
B19	5.04	5.04	165.740	165.733	Pilipo. B		

# Supplementary information:

- No fire or explosion
- No rupture
- No leakage
- No venting





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7.3.9	TABLE: Forced in	N				
Sample No.	Chamber ambient T, (°C)	OCV before test, (Vdc)	Particle location   Maximum applied pressure, (N)		Results	
Charging tem	nperature: 10°C	Pupote b	Tell Supply	Nulpo.	notek.	
nhotok A	100 - W.	h hanolo	Man en	Jolek Anbore	Postak	
V40754	Vultur by	otek Anboten	Ano - Joh	abotak - Anhore	h bu	
-vatotek-	Vupor Vu	"Olak Vipoles	Nugar.	Anbi	- Pun	
abblok	Anhoto.	Sun Supe	We South	bri.	baten An	
- NO - Ibos	ex Pripoter	Kup Nek	botok kaporo	Yu.	anbotek	
Charging tem	nperature: 45°C	brup. rak	abotek Aupots	Pur Viek	anbotek.	
100ss - by	-otok suboti	AUDO-	hatell kni	oter Trup.	ABIOTEK.	
Vilpoje.	Irun Mair	otak -Fuporg	Pi,	Aupoles Pulps	ick - abolt	
Articles.	Van Tek	upotek Aupote	W. Colok	Wupales Vien	101	
Anbolek.	Anh.	-balak Anba	Page March	Pilpote <sub>k</sub> Ve	100, 00,	
ledna - Yas	ak Vapo	by. Policy.	poter - Anh	Yaloga, A	Antique	

#### Supplementary information:

- 1) Identify one of the following:
- 1: Nickel particle inserted between positive and negative (active material) coated area.
- 2: Nickel particle inserted between positive aluminium foil and negative active material coated area.
- No fire or explosion
- Others (please explain)

D.2	TABLE: Internal AC resistance for coin cells						N	
Sample No.	Ambien	t T (°C)	Store time (h) Resistance Rac (mú		e Rac (mΩ)	2) Results		
Pur.	Vilborak -	Vupp.	notek	Anhoto	Pup	lada 4a	DA.	blipor.
Vine.	- apptok	Vupor	K WOTOK	Babo!	No. Bulley	- 10 k	olek.	- 5000
FUD	N Plant	k Wapoz	P.U 46	V	losek Vi	700. bu	WOIN.	- 63

#### **Supplementary information:**

<sup>1)</sup> Coin cells with internal resistance less than or equal to 3  $\Omega$ , see test result on corresponding tables



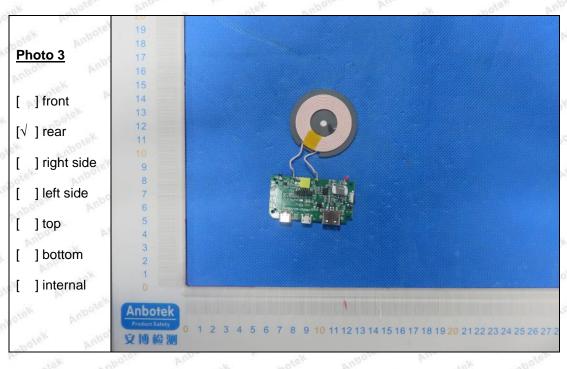
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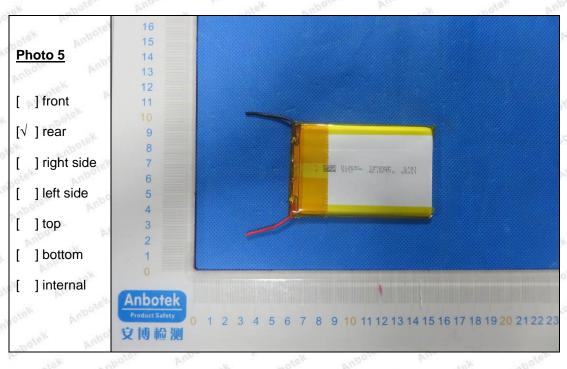
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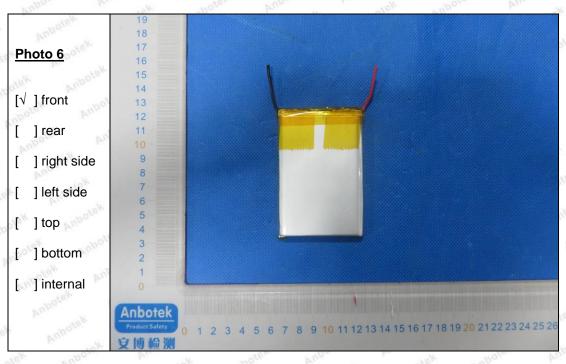






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\*\*\*End of the report\*\*\*

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