

Shandong Anodepower Battery Co.,Ltd

TEST REPORT

SCOPE OF WORK

Test Report

REPORT NUMBER

220621060SZN-001

ISSUE DATE

20- June-2022

REVISION DATE

None

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Special Test Report_ A

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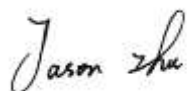


Report No.: 220621060SZN-001

TEST REPORT

Applicant	:	Shandong Anodepower Battery Co., Ltd
Address	:	Yanggu Double Innovation Industrial Park, East Industrial Concentration Zone, Yanggu County Economic Development Zone, Liaocheng City, Shandong Province, China
Product Description		
Name of Product	:	Rechargeable Li-ion Battery
Trade Mark	:	-
Model Number	:	ZNL 18650-1S1P
Model differences	:	N/A
Date of Receival	:	6-May-2022
Date of test Conducted	:	6-May-2022 to 9-June-2022
Test		
Test Requested	:	Test according to standards: UL 2054 Issue: 2004/10/29 Ed:2 Rev:2011/09/14 UL Standard for Safety Household and Commercial Batteries
Test Conclusion:	:	The products complied with the requirements listed in <u>Test Requested</u> .
Other information	:	-
General Remark:		
<ul style="list-style-type: none"> This test report is only for evaluation of the specified standard clauses listed in <u>Test Requested</u>. When determine the test result, measurement uncertainty has been considered. <p>Manufacturing site: Same as applicant</p>		

Tested by:



Jason Zhu
Engineer

Approved by:



Joseph Li
Reviewer

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Test Requested:

UL 2054 Issue: 2004/10/29 Ed:2 Rev:2011/09/14 UL Standard for Safety Household and Commercial Batteries		
9	Short-Circuit Test	P
10	Abnormal Charging Test	P
11	Abusive Overcharge Test	P
12	Forced-Discharge Test	N/A
13	Limited Power Source Test	P
13A	Battery Pack Component Temperature Test	P
13B	Battery Pack Surface Temperature Test	P
19	250 N Steady Force Test	N/A
20	Mold Stress Relief Test	N/A
21	Drop Impact Test	N/A
Possible test case verdicts: - test case does not apply to the test object..... : N/A - test object does meet the requirement..... : P (Pass) - test object does not meet the requirement : F (Fail)		

Appendix 1: Critical components information					
Component Name	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Cylindrical Li-ion Cell	Shandong Anodepower Battery Co., Ltd.	ZNL 18650 2200mAh	3.7Vd.c., 2200mAh	UL 1642	See report 220526050SZN-001
IC (U1)	SHENZHEN FINE MADE ELECTRONICS GROUP GO., LTD.	DW01FA	Over-charge Threshold Voltage: 4.300V±0.05V; Over-discharge Threshold: 2.500V±0.075V; Excess discharge-current threshold: 0.150V±0.020V; TA: -40°C to +85°C; Tstg: -65°C to +150°C	--	Tested with battery
MOSFET (U2)	SHENZHEN FINE MADE ELECTRONICS GROUP GO., LTD.	SC8205A	VDS: 20V, VGS: ±12V, ID: 6A@Ta=25°C, TJ, TSTG: -55°C to 150°C	--	Tested with battery
PTC	SHENZHEN JINKE SPECIAL MATERIALS CO LTD	JK-P260	Vmax: 15V, Imax: 100A, Ih: 2.6A, It: 5.8A	UL 1434	UL E217453
PCB	SHENZHEN HECHENG FAST ELECTRONIC TECHNOLOGY CO LTD	MP-326	130°C, V-0, FR-4	UL 796	UL E159194
PCB (Alternative)	Interchangeable	Interchangeable	130°C, V-0, FR-4	UL 796	UL Approved
Heat-shrinking outer-wrap	Shenzhen Golden Ocean Industrial Development Co., Ltd	32mm*0.1mm	PVC, 130°C	--	Tested with battery
Wiring	DONGGUAN TRIUMPHCABLE CO LTD	1007	22AWG, 80°C, 300V	UL 758	UL E249743
Wiring (Alternative)	Interchangeable	Interchangeable	22AWG, 80°C, 300V	UL 758	UL Approved
Connector	Xinxiang Xingxing Electronic Factory	XH2.54-2P	PC/ABS, 100V AC/DC, 3A AC/DC, Temperature range: -25°C to 85°C	--	Tested with battery
Remark:					

Appendix 2: Marking

Rechargeable Li-ion Battery
ZNL 18650-1S1P
3.7Vd.c., 2200mAh, 8.14Wh
Red: (+) Black: (-)
CAUTION
Risk of fire and burns.
Do not open, crush, heat above 60°C/140F or incinerate.
Do not short circuit, if bulges severely, discontinue use.
Follow manufacturer's instruction.
Production Date: YYYYMMDD
Manufacturer: Shandong Anodepower Battery Co., Ltd.

Remark:

Above plate will be printed on the surface of the battery.

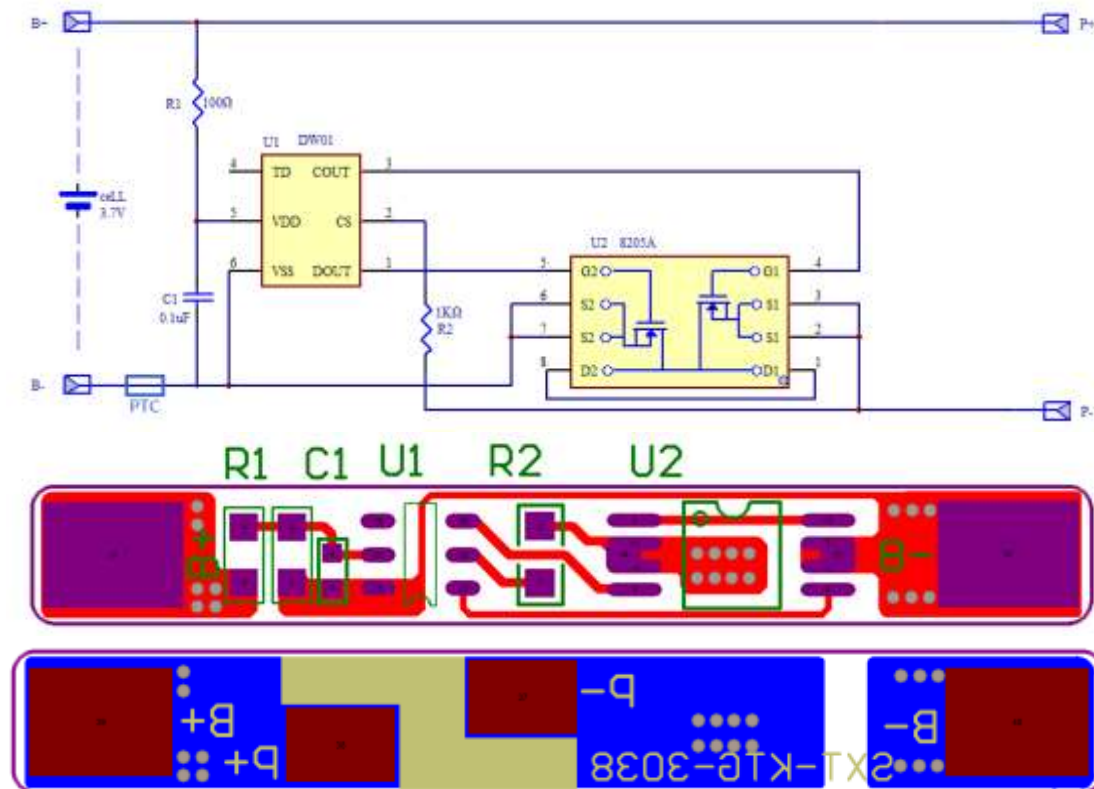
Date code: "YYYYMMDD" represents the date of manufacturing.

YYYY-Year; MM-Month; DD-Day; For example 20220412 means the manufacture date is Apr. 12, 2022

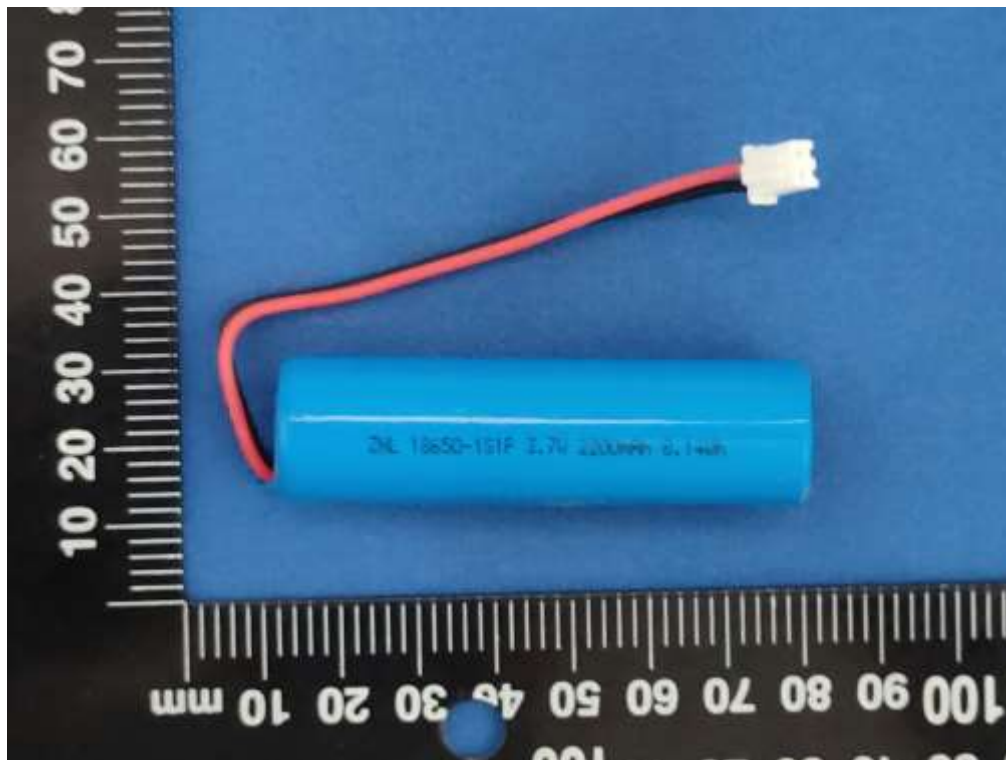
Appendix 3: Product Specification

Product	Cell	Battery
Model name	ZNL 18650 2200mAh	ZNL 18650-1S1P
Nominal Capacity (mAh)	2200	2200
Nominal Voltage (V)	3.7	3.7
Normal charging current (mA)	1100	440
Normal charging voltage (V)	4.20	4.20
End of charging current (mA)	44	44
Max. charging current (mA)	2200	1500
Upper limit charging voltage (V)	4.25	4.25
Normal discharging current (mA)	1100	1100
End of discharging voltage (V)	2.75	2.75
Max. discharging current (mA)	2200	2000
Operating temperature range (°C)	Charge:0°C to 45°C Discharge:-20°C to 60°C	Charge:0°C to 45°C Discharge:-20°C to 60°C

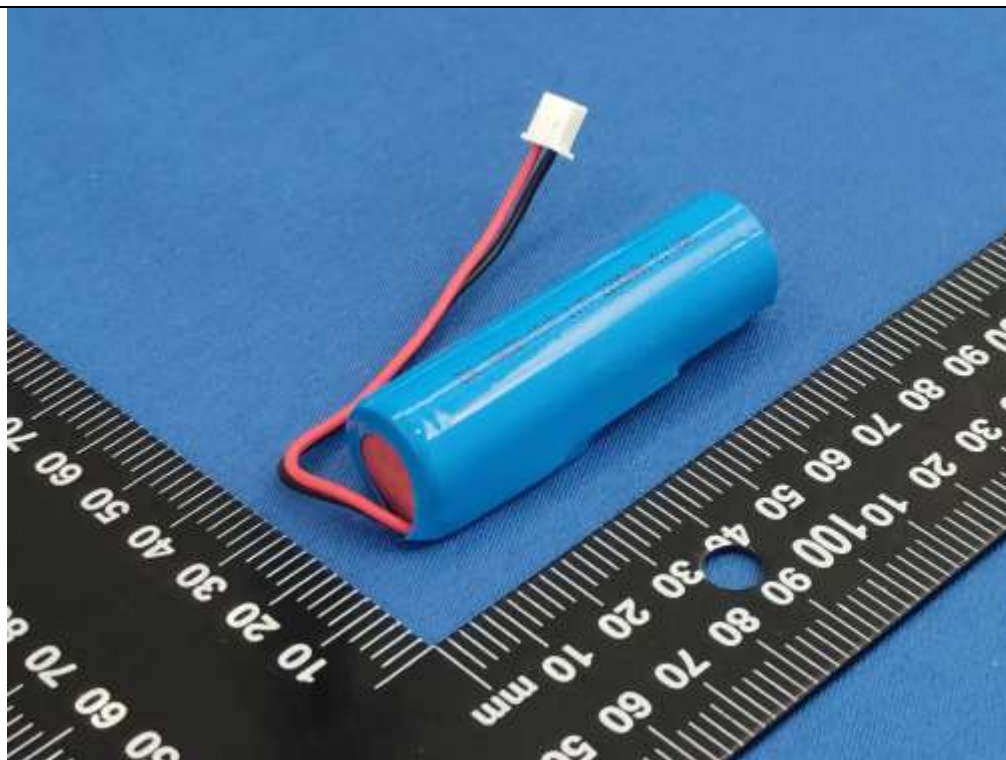
Appendix 4: Circuit diagram and layout



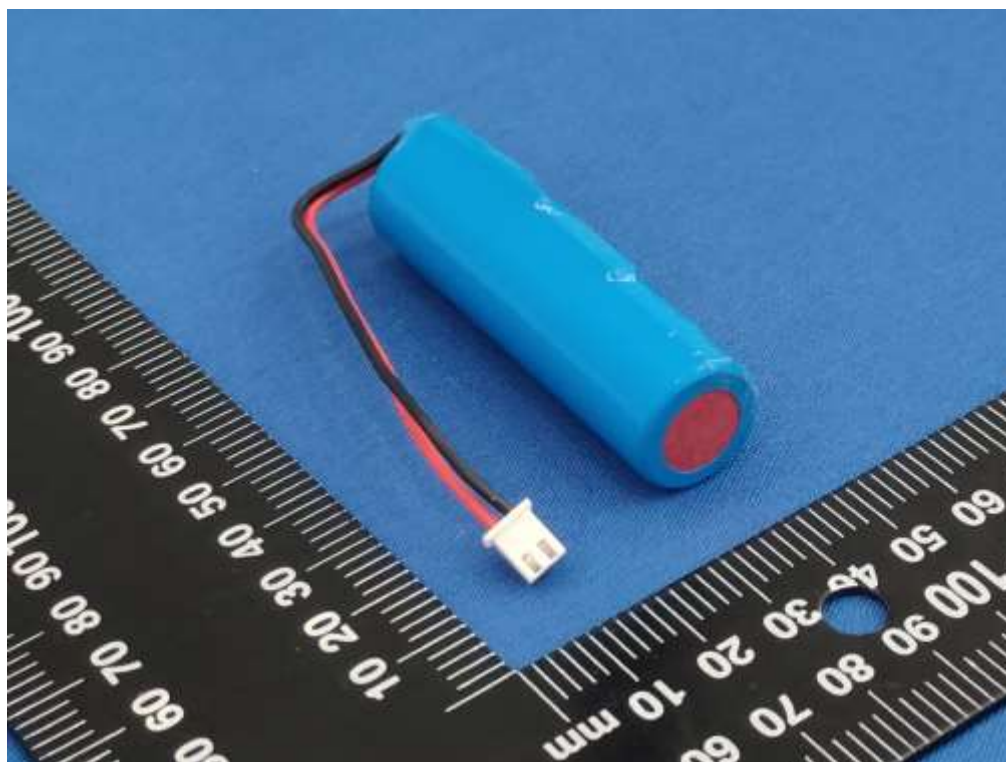
Appendix 5: Photo



Picture 1 Overall view 1 of Lithium Rechargeable Battery



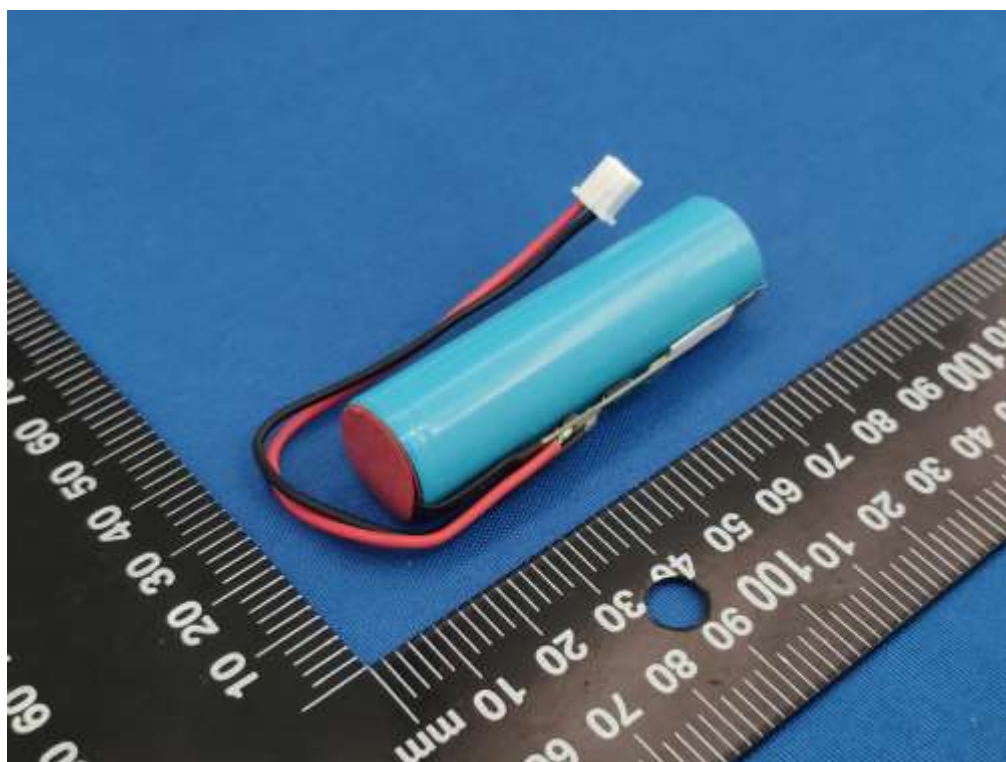
Picture 2 Overall view 2 of Lithium Rechargeable Battery



Picture 3 Overall view 3 of Lithium Rechargeable Battery



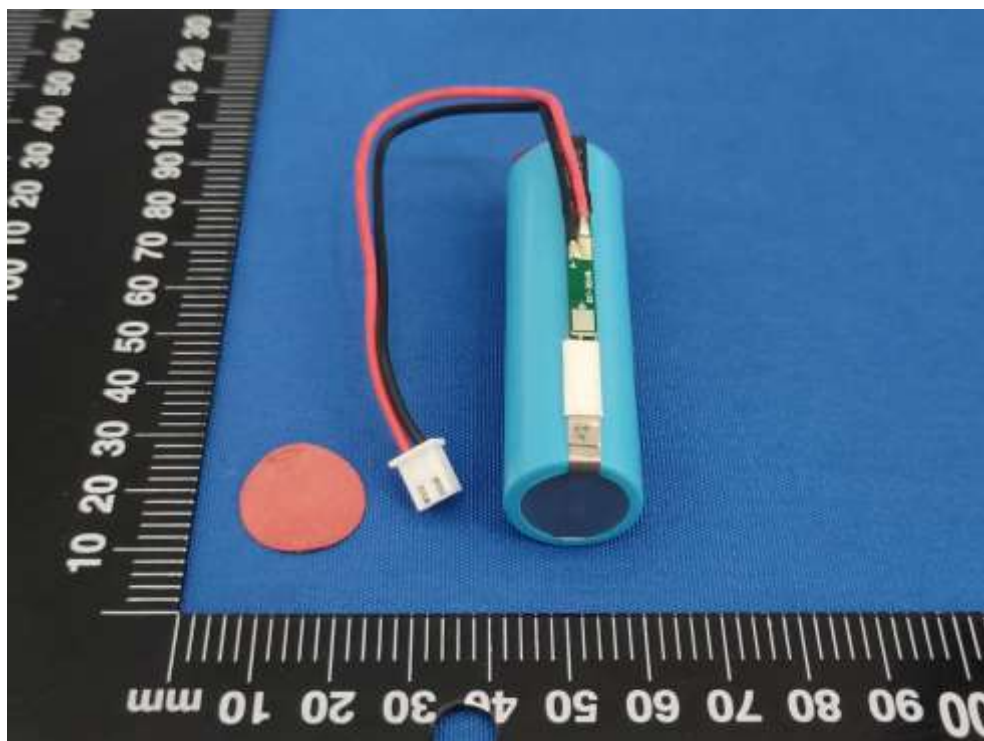
Picture 4 Overall view of Lithium Rechargeable Battery with heat-shrinking tube disassembled



Picture 5 Overall view of the core-pack



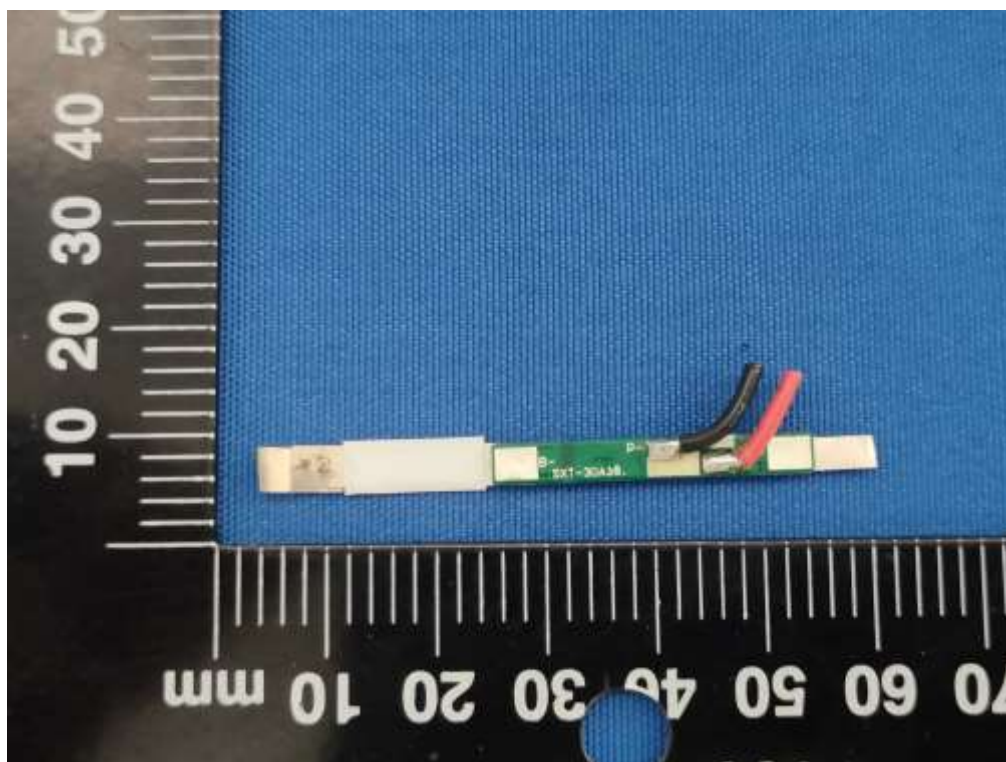
Picture 6 View 1 of Cells connection



Picture 7 View 2 of Cells connection



Picture 8 Top view of PCM



Picture 9 Bottom view of PCM



Figure 10 Front view of cell



Figure 11 Back view of cell

-----End of report-----