

# **Test Verification of Conformity**

## Verification Number: 230501389SHA-V1

On the basis of the tests undertaken, the sample<s> of the below product have been tested with the requirements of the referenced specification<s>/standard<s>. This verification is part of the full test report<s> and should be read in conjunction with it <them>.

Applicant Name & Address:	Soluna (Shanghai) Co., Ltd 2nd Floor, No. 979, Yunhan Road, Lingang New Area, China	
Product Description:	Rechargeable Li-ion Battery	
Ratings & Principle Characteristics:	See Appendix (Specifications table)	
Models/Type References:	Soluna 10K Pack LV	
Brand Name:	SOLUNA	
Relevant Standards:	Clause 9.1-9.8 (unit level test) of ANSI/CAN/UL 9540A:2019 (Fourth Edition) + UL CRD's	
Verification Issuing Office Name & Address:	Intertek Testing Services Shanghai Building No.86, 1198 Qinzhou Road (North), Shanghai 200233, China	
Date of Tests:	2023-06-25 to 2023-06-27	
Test Report Number(s):	2205042005044.004	
rest heport humber(s).	2305013895HA-001	

Additional information in Appendix.

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Name: Max Jin Position: General Manager Date: 2023-08-14

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### **APPENDIX: Test Verification of Conformity**

This is an Appendix to Test Verification of Conformity Number: 230501389SHA-V1

#### Specifications table

Mode name	Soluna 10K Pack LV		
Module series and/or parallel configuration	2P16S		
Total number of cells	32		
Cooling method	Natural		
Rated capacity	200Ah		
Rated energy	10.24 kWh		
Nominal voltage	51.2V		
Mass of equipment	94 kg		
Dimension of equipment	500mm*215mm*730mm		
Standard charge method			
Charge current	100A		
End of charge voltage	56V		
Standard discharge method			
Discharge current	100A		
End of discharge voltage	48V		

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Name: Max Jin Position: General Manager Date:2023-08-14

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Summary of testing		
The thermal runaway initiation method <sup>a)</sup>	Heating	
Thermal Runaway Propagation	In initiating unit, no thermal runaway propagation from	
	initiating module to rest modules in initiating unit.	
	In initiating module, 1 cell went to thermal runaway due to	
	external heating. The other 7 cells vented and went to	
	thermal runaway due to thermal runaway propagation.	
Maximum Temperature of Target BESS (°C)	26.7°C	
Maximum Temperature of Wall Surface (°C)	59.0°C	
Maximum Heat Flux on target wall surfaces (kW/m <sup>2</sup> )	N/A	
Maximum Heat Flux on target BESS units (kW/m <sup>2</sup> )	N/A	
Peak Chemical Heat Release (kW)	8.32 kW	
Peak Convective Heat Release Rate (kW)	1.12 kW	
Peak Smoke Heat Release Rate (m <sup>2</sup> /s)	0.1699 m²/s	
Total Smoke Heat Release Rate (m <sup>2</sup> )	108.45 m <sup>2</sup>	
Maximum Heat Flux on Egress Path (kW/m <sup>2</sup> )	N/A	
External Flaming from BESS	Not observed	
Flying debris or explosive discharge of gases	Not observed	
Sparks, electrical arcs, or other electrical events	Not observed	
Re-ignitions	Not observed	
Conclusion:		

\*) The thermal runaway initiation method was based on the same thermal runaway method for the UL 9540A cell level test (report no. 4790509108, issued by UL(Changzhou) Quality Technical Service Co,. LTD.)

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Name: Max Jin Position: General Manager

Date: 2023-08-14

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