

# Test Report

For

**ANSI/CAN/UL9540A**

**Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems**

**[Unit Level]**

**Report Number:** CQES240700066401

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**Test object / Model:**

RX-5kWh-HC, RX-10kWh-HC, RX-15kWh-HC, RX-20kWh-HC, RX-25kWh-HC, RX-30kWh-HC, RX-35kWh-HC, RX-40kWh-HC, RX-45kWh-HC, RX-50kWh-HC, RX-5kWh-C, RX-10kWh-C, RX-15kWh-C, RX-20kWh-C, RX-25kWh-C, RX-30kWh-C, RX-35kWh-C, RX-40kWh-C, RX-45kWh-C, RX-50kWh-C

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## [Summary of Test results]

Cell Level Test  
Cell model: 48173120  
100Ah  
Report No.:  
CN24MWFY 001

Cell Design:	48173120 100Ah
Thermal Runaway Methodology:	External heating
Cell Surface Temperature at Gas venting:	209.3 °C
Cell Surface Temperature at Thermal Runaway:	266.8 °C
Gas Composition:	Mainly Hydrocarbon, H <sub>2</sub> , CO, CO <sub>2</sub>
Lower Flammability Limit:	7.5 Vol% at 25 °C, 5.9 Vol% at 210.3 °C
Burning Velocity:	0.771 m/s
Pmax:	0.74 MPa
Thermal Runaway was Induced in the Cell or not:	Induced
Cell Vent Gas is Flammable or not in Air:	Flammable

Module Level Test  
Module model: N/A  
Report No: N/A

Module Design:	N/A
Thermal Runaway Methodology:	N/A
External Flaming:	N/A
Locations of Flame Venting:	N/A
Flying Debris:	N/A
Peak Smoke Release Rate:	N/A
Gas Generation and Composition:	N/A
Thermal Runaway are Contained by the Module Design or not:	N/A
Cell Vent Gas is Flammable or not:	N/A
Other Description:	N/A
Test Video file:	N/A

Unit Level Test  
Unit model:  
RX-5kWh-HC, RX-10kWh-HC, RX-15kWh-HC, RX-20kWh-HC, RX-25kWh-HC, RX-30kWh-HC, RX-35kWh-HC, RX-40kWh-HC, RX-45kWh-HC, RX-50kWh-HC, RX-5kWh-C, RX-10kWh-C, RX-15kWh-C, RX-20kWh-C, RX-25kWh-C, RX-30kWh-C, RX-35kWh-C, RX-40kWh-C, RX-45kWh-C, RX-50kWh-C  
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### Unit Design:

Unit Design:	RX-5kWh-HC, RX-10kWh-HC, RX-15kWh-HC, RX-20kWh-HC, RX-25kWh-HC, RX-30kWh-HC, RX-35kWh-HC, RX-40kWh-HC, RX-45kWh-HC, RX-50kWh-HC, RX-5kWh-C, RX-10kWh-C, RX-15kWh-C, RX-20kWh-C, RX-25kWh-C, RX-30kWh-C, RX-35kWh-C, RX-40kWh-C, RX-45kWh-C, RX-50kWh-C
Thermal Runaway Methodology:	External heating using thin film
External Flaming:	No external flaming observed
Locations of Flame Venting:	No flame extension observed
Flying Debris:	No flying debris observed
Explosion or not:	No explosion observed
Max. Surface Temperature of Module in Target BESS Unit:	34.3 °C
Max. Temperature Rise on Wall Surfaces:	8.5 °C
Thermal Runaway are Contained by the Unit Design or not:	Contained by the Unit Design
Cell Vent Gas is Flammable or not:	Flammable
Heat Flux in the Center of Egress:	0.017 kW/m <sup>2</sup>
Cheesecloth Indicator Flaming or not:	No flaming or carbonizing
Test Video File:	Archived by Applicant

### Remark:

This report only evaluated unit level test which is listed inside the dotted box.



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