BATTERY TEST REPORT

52V 50Ah Battery Pack
CHARGE & DISCHARGE TEST

Genuine Samsung INR21700-50G Cells · 14S10P Configuration

Measured discharge 49.78 Ah · 99.6% of rated capacity · Verdict: PASS

DOCUMENT TYPE	Charge & Discharge Test Report
TEST SAMPLE	BOOANT 52V 50Ah Lithium-ion Battery Pack
REPORT NO.	BOOANT-TR-20261022-1-001-1

Battery Charge & Discharge Test Report

52V 50Ah Lithium-ion Battery Pack (14S10P) · Genuine Samsung INR21700-50G Cells

1. Test Information

Report No.	BOOANT-TR-20261022-1-001-1
Test sample	BOOANT 52V 50Ah lithium-ion battery pack — genuine Samsung INR21700-50G cells, 14S10P configuration (140 cells), rated energy 2,600 Wh, 58.8V full-charge voltage
Pack serial no.	Not recorded
Test date	22 October 2026
Test window	11:03:00 to 20:18:19 (9 h 15 min total, incl. rests)
Test equipment	PESKOE FD-0901B Battery High-Current Tester, channel 1-001-1
Sampling	Voltage / current / capacity / energy logged every 1 s (33322 records)
Report issued	22 October 2026

2. Test Procedure

Step	Operation	Setpoints	Purpose
1	Constant-current discharge	25A, cut-off 39.5V	Discharge the as-received pack to empty
2	Rest	5 min	Voltage stabilisation
3	CC/CV charge	10A to 58.8V, CV taper to 1A	Full charge from empty
4	Rest	5 min	Voltage stabilisation
5	Constant-current discharge	25A, cut-off 39.5V	Full-capacity discharge test
6	CC/CV charge (partial)	10A, 56.0V limit	Partial recharge after test

3. Key Results — Full Discharge (Step 5)

Rated capacity	50.00 Ah (2,600 Wh)	**Measured vs rated**	**99.6% capacity · 97.6% energy**
Discharge capacity	**49.78 Ah**	**Discharge energy**	**2,536.6 Wh**
Charge capacity (Step 3)	49.49 Ah	**Charge energy (Step 3)**	2,647.7 Wh
Average discharge voltage	51.0 V	**Median discharge voltage**	51.4 V
Discharge current	25A constant (approx. 0.5C)	**Round-trip energy efficiency**	95.8%

VERDICT: PASS — measured discharge capacity 49.78 Ah = 99.6% of the 50 Ah rating (acceptance criterion: ≥ 95% of rated capacity).

The pack was charged from empty to 58.8V (49.49 Ah accepted), rested, then discharged at a constant 25A down to the 39.5V cut-off. It delivered 49.78 Ah and 2,536.6 Wh, which is 99.6% of its 50Ah rated capacity, with an average discharge voltage of 51.0V. The discharge curve (Section 5) shows a flat, stable voltage plateau with no abnormal drops, indicating healthy, well-matched cells.

4. Step-by-Step Results

Step	Operation	Avg current	Capacity (Ah)	Energy (Wh)	End voltage	Duration
1	CC discharge	25.0 A	13.087	591.9	39.50 V	0:31:24
2	Rest	—	—	—	42.31 V	0:05:00
3	CC/CV charge	9.6 A	49.492	2,647.7	58.80 V	5:09:35
4	Rest	—	—	—	58.71 V	0:04:59
5	CC discharge	25.0 A	49.776	2,536.6	39.50 V	1:59:26
6	CC/CV charge (partial)	10.0 A	14.143	685.3	50.89 V	1:24:51

Capacity and energy are the step totals recorded by the test system. Rest steps carry the running counters forward and are shown as —.

5. Test Curves

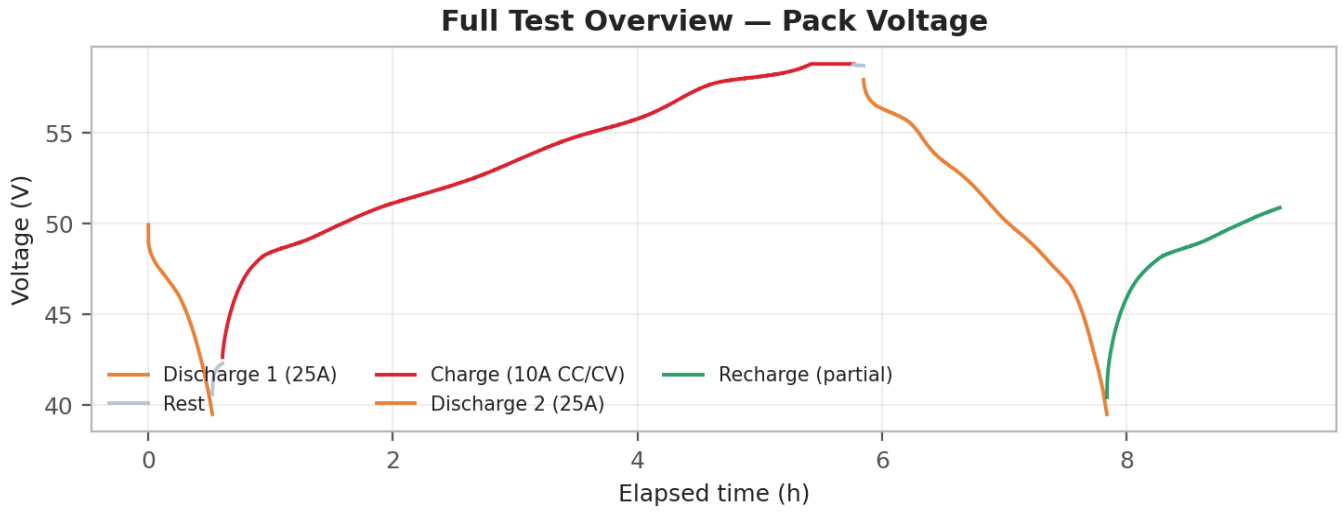

Figure 1 — Pack voltage across the full test sequence (initial discharge, full charge, capacity discharge, partial recharge).

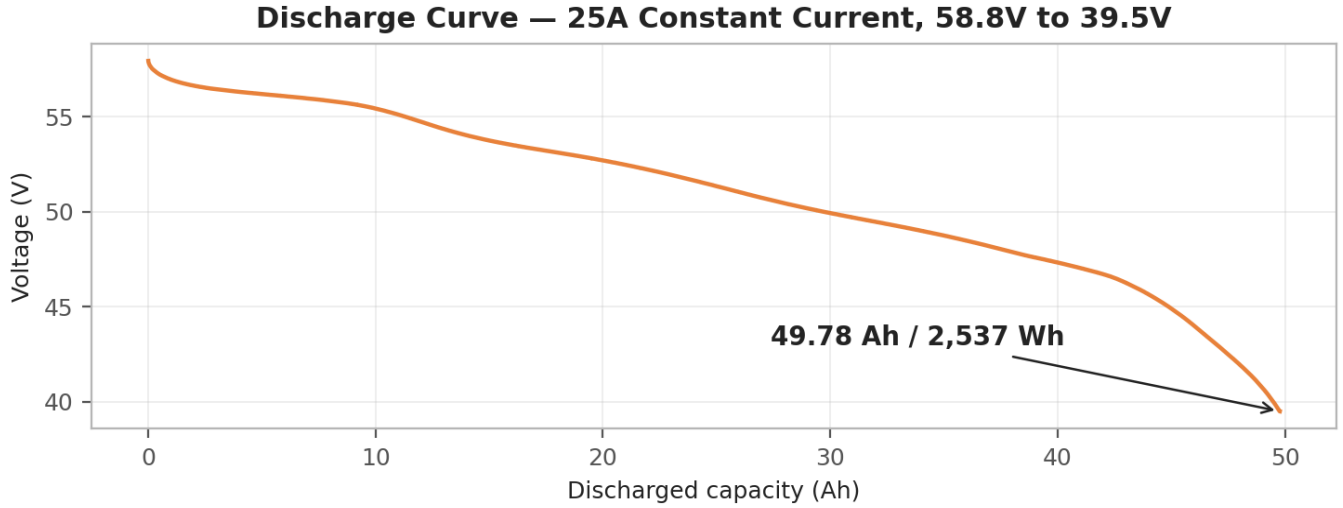

Figure 2 — Step 5 discharge curve: voltage against discharged capacity at 25A constant current.

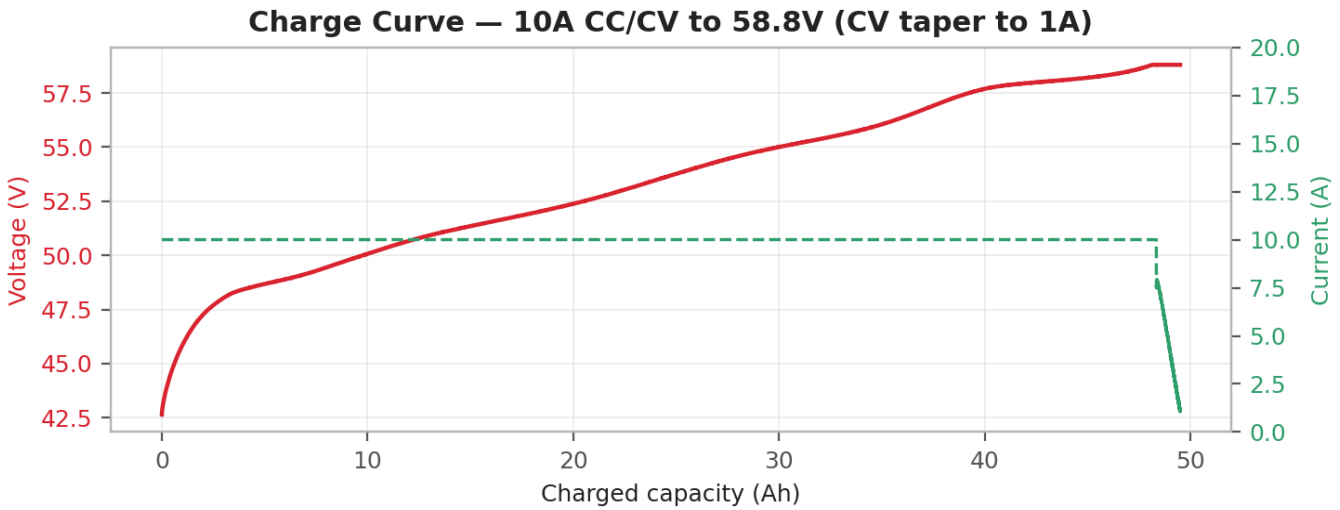

Figure 3 — Step 3 charge curve: voltage and current against charged capacity. Current tapers in the CV phase near 58.8V.

6. Notes

1. All values in this report are taken directly from the test system data export of 22 October 2026 (channel 1-001-1); no values have been adjusted or estimated.
2. Step 1 discharged the pack from its as-received state (13.09 Ah) and is not a full-capacity measurement. The rated full-discharge result is Step 5.
3. The 39.5V discharge cut-off and 58.8V full-charge voltage correspond to the pack's 14S10P configuration and its BMS operating window.
4. This report documents a single bench test of one pack and is intended as production quality evidence.
5. This is an in-house bench test report prepared by BOOANT from the test system data export. It is not a third-party laboratory certificate.

7. Measurement Context

This discharge ran at 25A, which for a 14S10P pack is 2.5A per cell (0.5C), down to the 39.5V pack cut-off (2.82V per cell). Delivered capacity per cell was 4.98Ah. The pack's rated capacity is based on the cells' nameplate capacity of 5.00Ah per cell, which cell manufacturers specify at a low reference discharge rate (0.2C). Delivered capacity decreases as the discharge rate increases and as the cut-off voltage rises, so a capacity measured at 0.5C is not directly comparable with the low-rate nameplate figure.