BATTERY TEST REPORT

52V 20Ah Battery Pack
CHARGE & DISCHARGE TEST

Genuine Samsung INR21700-50G Cells · 14S4P Configuration

Measured discharge 19.12 Ah · 95.6% of rated capacity · Verdict: PASS

DOCUMENT TYPE	Charge & Discharge Test Report
TEST SAMPLE	BOOANT 52V 20Ah Lithium-ion Battery Pack
REPORT NO.	BOOANT-TR-20260923-1-002-1

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52V 20Ah Lithium-ion Battery Pack (14S4P) · Genuine Samsung INR21700-50G Cells

1. Test Information

Report No.	BOOANT-TR-20260923-1-002-1
Test sample	BOOANT 52V 20Ah lithium-ion battery pack — genuine Samsung INR21700-50G cells, 14S4P configuration (56 cells), rated energy 1,040 Wh, 58.8V full-charge voltage
Pack serial no.	Not recorded
Test date	23 September 2026
Test window	17:02:52 to 11:45:41 (18 h 42 min total, incl. rests)
Test equipment	PESKOE FD-0901B Battery High-Current Tester, channel 1-002-1
Sampling	Voltage / current / capacity / energy logged every 1 s (14439 records)
Report issued	23 September 2026

2. Test Procedure

Step	Operation	Setpoints	Purpose
1	CC/CV charge	5A to 58.8V, CV taper to 1A	Charge check (pack arrived full)
2	Rest	5 min	Voltage stabilisation
3	Constant-current discharge	20A, cut-off 39.5V	Full-capacity discharge test
4	CC/CV charge (partial)	5A, 56.0V limit	Partial recharge after test

3. Key Results — Full Discharge (Step 3)

Rated capacity	20.00 Ah (1,040 Wh)	**Measured vs rated**	**95.6% capacity · 91.4% energy**
Discharge capacity	**19.12 Ah**	**Discharge energy**	**950.7 Wh**
Top-up charge	0.00 Ah	**Top-up energy**	0.1 Wh
Average discharge voltage	49.7 V	**Median discharge voltage**	49.8 V
Discharge current	20A constant (approx. 1.0C)	**Round-trip energy efficiency**	n/a (see Note 2)

VERDICT: PASS — measured discharge capacity 19.12 Ah = 95.6% of the 20 Ah rating (acceptance criterion: ≥ 95% of rated capacity).

The pack arrived fully charged (58.7V) and, after a rest, was discharged at a constant 20A down to the 39.5V cut-off. It delivered 19.12 Ah and 950.7 Wh (95.6% of its 20Ah rating), with an average discharge voltage of 49.7V. The discharge curve (Section 5) shows a flat, stable plateau with no abnormal drops.

4. Step-by-Step Results

Step	Operation	Avg current	Capacity (Ah)	Energy (Wh)	End voltage	Duration
1	CC/CV charge	0.4 A	0.001	0.1	57.96 V	0:00:12
2	Rest	—	—	—	57.95 V	0:05:00
3	CC discharge	20.0 A	19.120	950.7	38.64 V	15:39:34
4	CC/CV charge (partial)	4.8 A	14.185	736.8	56.00 V	2:58:01

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

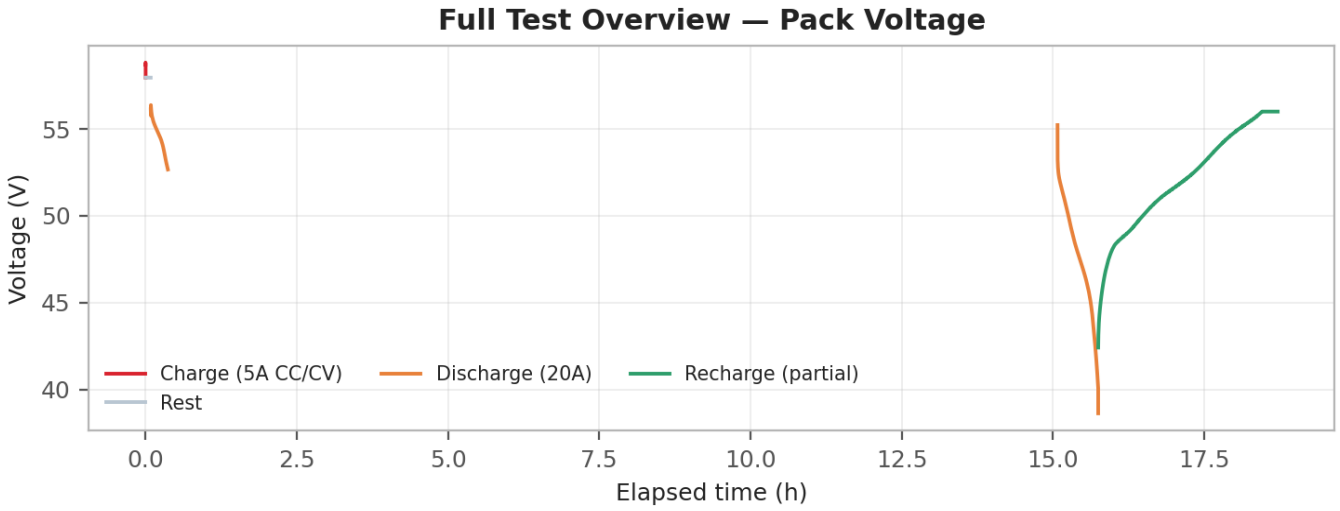


Figure 1 — Pack voltage across the full test sequence (top-up charge, capacity discharge, partial recharge).

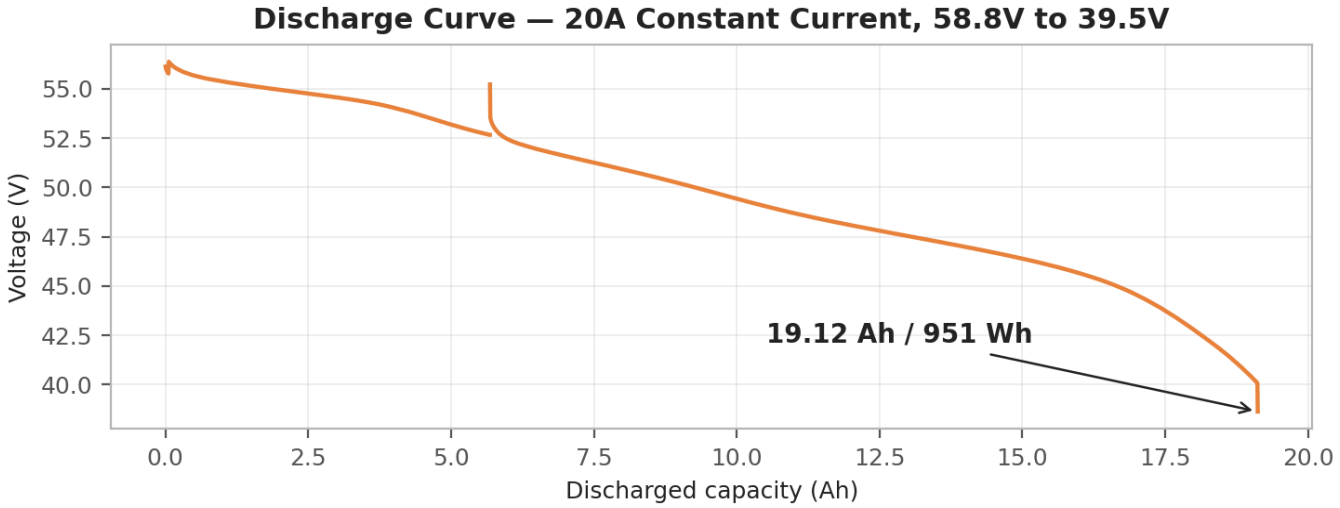


Figure 2 — Step 3 discharge curve: voltage against discharged capacity at 20A constant current.

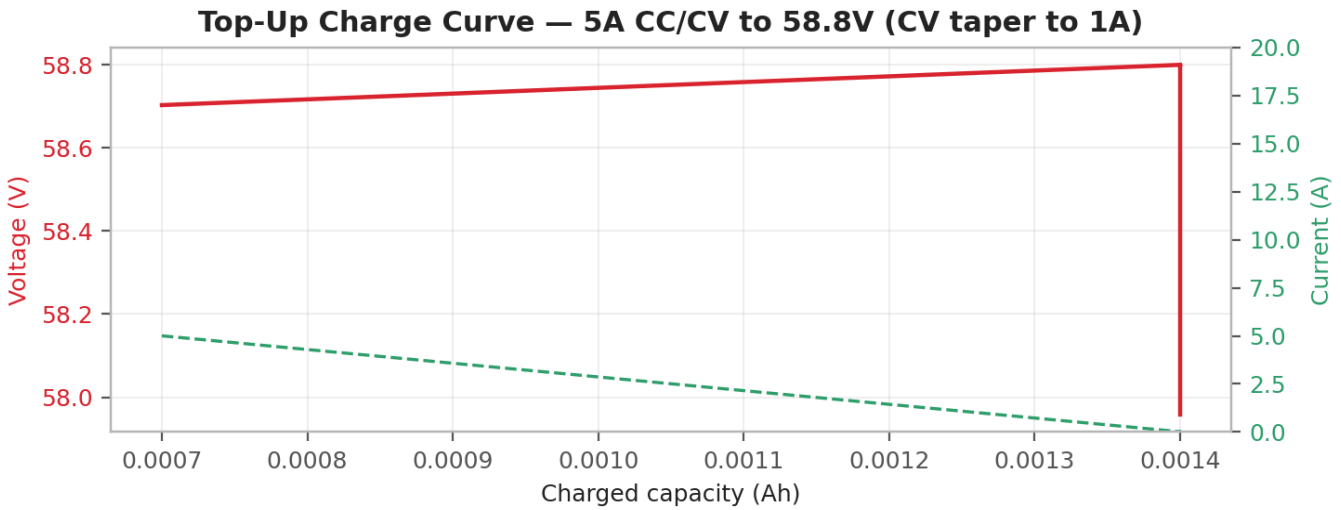


Figure 3 — Step 1 charge curve: voltage and current against charged capacity. Current tapers in the CV phase near 58.8V.

6. Notes

1. All values in this report are taken directly from the test system data export of 23 September 2026 (channel 1-002-1); no values have been adjusted or estimated.
2. The pack arrived fully charged (58.7V); Step 1 accepted only 0.00 Ah before the discharge test, so no round-trip efficiency is quoted for this run. The rated full-discharge result is Step 3.
The Step 3 discharge was paused by the operator at 17:25 on 23 September (5.68 Ah) and resumed at 08:07 on 24 September; the pack rested unloaded in between, so the curves show a voltage recovery step at that point. Capacity counting continued across the pause.
3. The 39.5V discharge cut-off and 58.8V full-charge voltage correspond to the pack's 14S4P 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 20A, which for a 14S4P pack is 5.0A per cell (1.0C), down to the 39.5V pack cut-off (2.82V per cell). Delivered capacity per cell was 4.78Ah. 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 1.0C is not directly comparable with the low-rate nameplate figure.