

UN 38.3 Test Report

Lithium cell or battery test summary in accordance with
sub-section 38.3 of Manual of Tests and Criteria.

Test Report Number	UN-C31N2315-01
Customer Name	ASUS
Product Name	LI-ION BATTERY PACK
Model Name	C31N2315
Test specification	ST/SG/AC.10/11/Rev.7/Amend.1
UN38.3 Test Item	T.1, T.2, T.3, T.4, T.5, T.6, T.7, T.8 (Note that T.6 and T.8 are for Cell)
Test sample No	1~38
Test Date	2024/1/26 ~ 2024/2/28
Date of Test Report	2024/2/28
Product Manufacturer & Test Laboratory	Dynapack Electronic Technology (Suzhou) Co., Ltd
Manufacturer & Test Laboratory information	Address: No. 8 Hua-Gang Road, Wujiang Economical and Technological Development Zone, Suzhou city, JiangSu. PRC. Tel: 0086-051263408688 E-mail: Cathy.Xu@dynapack.com.cn ZIP: 215200 Website: http://www.dynapack.com.tw

Description of Battery	
Model Name	C31N2315
Battery Type	Small LI-ION BATTERY PACK
Pack Configuration	3 Series / 1 Parallel
Nominal Voltage	11.55 Vdc
Rated Capacity(mAh/Wh)	3550mAh / 42Wh
Mass	0.185 kg
Pack Dimension(mm)	274.90*75.40*5.80
Cell Brand	Highpower
Cell model	485778ACB

Performed Tests		Results
UN38.3 T1	Altitude simulation	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
UN38.3 T2	Thermal test	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
UN38.3 T3	Vibration	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
UN38.3 T4	Shock	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
UN38.3 T5	External short circuit	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
UN38.3 T6	Crush	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
UN38.3 T7	Overcharge	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
UN38.3 T8	Forced discharge	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL
Reference to assembled battery testing requirements:		
<input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> UN38.3.3(f) <input type="checkbox"/> UN38.3.3(g)		

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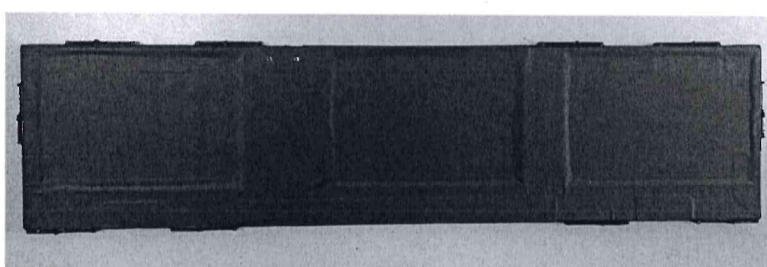
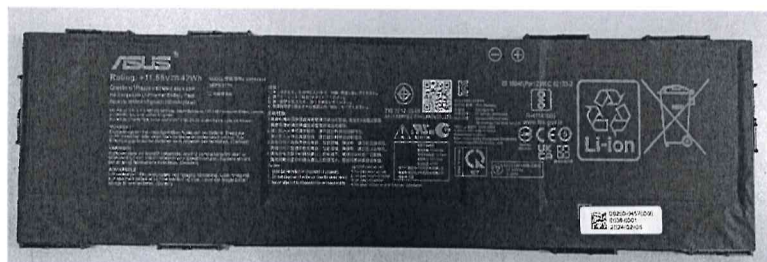
No. 8 Hua-Gang Road, Wujiang Economical and Technological Development
Zone, Suzhou city, JiangSu, PRC

1. Test Equipment

Inst. No.	Description	Series No	Function/Range
WJ6014	Learning Machine	D14106-2	20 V / 10 A
WJ6015	Chamber	6609K	-40~150°C
WJ9004	Learning Machine	D20131-7	20V / 15A
WJ9005	Chamber	MEA1504-010	0~100°C,10%~98%RH
WJ6103	Electronic Scales	0929016	0.2~600g,Accuracy 0.01g
WJ6108	3560 AC mΩMeter	051139050	0~5/50 V / 30mΩ-3kΩ
WJ6105	Vacuum Machine	GS55-221	-76~0cmHg
WJ6189	Thermal shock2	9811K	200°C ~-80°C
WJ6073	Vibration Machine	D1202031	5~2000Hz Level/5~1500Hz Vertical; Max. acceleration: 100gVertical;
WJ6188	Shock	M-15488	100G/10ms~5000G/0.2ms
WJ6115	Chamber	6514K	0-150°C /20%RH~98%RH
WJ6104	34970 data recorder	MY44039623	-100~+400°C
WJ4035	Digital Caliper	05565311	0~200mm
WJ6052	Crush	LG2975	0~20KN
WJ8037	34970 data recorder	MY44039446	-100~+400°C
WJ6106	POWER SUPPLY	006103176669002004	0~30V;0~18A
WJ6107	POWER SUPPLY	006103176670001002	0~30V;0~18A
WJ7006	34970 data recorder	MY44042480	-100~+400°C
WJ7008	POWER SUPPLY	006103156267001009	0~30V;0~18A
WJ7009	POWER SUPPLY	006103156273001007	0~30V;0~18A
WJ6197	DC E-LOAD	002022506570001023	3~120 V / 0~60 A
WJ7015	DC E-LOAD	123354F6A001	3~120 V / 0~60 A
WJ8000	Digital T-H-Meter	0046160D04	- 20 to 70°C 0%~100%RH
WJ8001	Digital T-H-Meter	2045240566	0 to+50°C/10 to 95%HR
WJ8002	Digital T-H-Meter	2045240692	0 to+50°C/10 to 95%HR

2. Detail records as below :

2.1 Photograph



Rating: +11.55V \Rightarrow 42Wh

MODEL(型號/型号): C31N2315
3ICP5/57/78

Questions? Please visit www.asus.com

二次鋰電池組

Rechargeable Li-Polymer Battery Pack

Capacity:3640mAh(Typical) / 3550mAh(Rated)

2.2 Test Data:

2.2.1 T.1 Altitude

Sample No.	Sample	OCV(V)	OCV(V)	Voltage Residual (%)	Mass(g)	Mass(g)	Mass Loss (%)	Result
	Status	Before	After		Before	After		
1	1CYC , Fully charge	13.082	13.069	99.90%	184.77	184.73	0.02%	PASS
2	1CYC , Fully charge	13.074	13.060	99.89%	184.39	184.39	0.00%	PASS
3	1CYC , Fully charge	13.065	13.051	99.89%	184.83	184.81	0.01%	PASS
4	1CYC , Fully charge	13.069	13.055	99.89%	184.26	184.25	0.01%	PASS
5	25CYC , Fully charge	13.083	13.069	99.89%	183.23	183.27	0.00%	PASS
6	25CYC , Fully charge	13.083	13.070	99.90%	184.39	184.36	0.02%	PASS
7	25CYC , Fully charge	13.081	13.068	99.90%	182.51	182.46	0.03%	PASS
8	25CYC , Fully charge	13.077	13.063	99.89%	184.45	184.48	0.00%	PASS
Temperature, °C		22.8			Humidity, %RH		42.1	

Criteria:

*Batteries meet requirement regard mass loss was less than (0.5% , $M < 1g$; 0.2%, $1g \leq M \leq 75g$; 0.1%, $M > 75g$) and voltage after testing is not less than 90% of its voltage immediately prior to this procedure.

*No leakage, No venting, No disassembly, No rupture and no fire.

2.2.2 T.2 Thermal shock

Sample No.	Sample	OCV(V)	OCV(V)	Voltage Residual (%)	Mass(g)	Mass(g)	Mass Loss (%)	Result
	Status	Before	After		Before	After		
1	1CYC , Fully charge	13.069	12.808	98.00%	184.73	184.71	0.01%	PASS
2	1CYC , Fully charge	13.060	12.807	98.06%	184.39	184.40	0.00%	PASS
3	1CYC , Fully charge	13.051	12.793	98.02%	184.81	184.85	0.00%	PASS
4	1CYC , Fully charge	13.055	12.800	98.05%	184.25	184.29	0.00%	PASS
5	25CYC , Fully charge	13.069	12.817	98.07%	183.27	183.25	0.01%	PASS
6	25CYC , Fully charge	13.070	12.807	97.99%	184.36	184.35	0.01%	PASS
7	25CYC , Fully charge	13.068	12.805	97.99%	182.46	182.48	0.00%	PASS
8	25CYC , Fully charge	13.063	12.804	98.02%	184.48	184.51	0.00%	PASS
Temperature, °C		22.5			Humidity, %RH		46.9	

Criteria:

*Batteries meet requirement regard mass loss was less than (0.5% , $M < 1g$; 0.2%, $1g \leq M \leq 75g$; 0.1%, $M > 75g$) and voltage after testing is not less than 90% of its voltage immediately prior to this procedure.

*No leakage, No venting, No disassembly, No rupture and no fire.

2.2.3 T.3 Vibration

Sample No.	Sample	OCV(V)	OCV(V)	Voltage Residual (%)	Mass(g)	Mass(g)	Mass Loss (%)	Result
	Status	Before	After		Before	After		
1	1CYC , Fully charge	12.808	12.784	99.81%	184.71	184.70	0.01%	PASS
2	1CYC , Fully charge	12.807	12.778	99.77%	184.40	184.42	0.00%	PASS
3	1CYC , Fully charge	12.793	12.774	99.85%	184.85	184.82	0.02%	PASS
4	1CYC , Fully charge	12.800	12.772	99.78%	184.29	184.32	0.00%	PASS
5	25CYC , Fully charge	12.817	12.789	99.78%	183.25	183.26	0.00%	PASS
6	25CYC , Fully charge	12.807	12.780	99.79%	184.35	184.31	0.02%	PASS
7	25CYC , Fully charge	12.805	12.781	99.81%	182.48	182.51	0.00%	PASS
8	25CYC , Fully charge	12.804	12.786	99.86%	184.51	184.52	0.00%	PASS
Temperature, °C		21.5			Humidity, %RH		43.6	

Criteria:

*Batteries meet requirement regard mass loss was less than (0.5% , $M < 1g$; 0.2%, $1g \leq M \leq 75g$; 0.1%, $M > 75g$) and voltage after testing is not less than 90% of its voltage immediately prior to this procedure.

*No leakage, No venting, No disassembly, No rupture and no fire.

2.2.4 T.4 shock

Sample No.	Sample	OCV(V)	OCV(V)	Voltage Residual (%)	Mass(g)	Mass(g)	Mass Loss (%)	Result
	Status	Before	After		Before	After		
1	1CYC , Fully charge	12.784	12.764	99.84%	184.70	184.74	0.00%	PASS
2	1CYC , Fully charge	12.778	12.770	99.94%	184.42	184.40	0.01%	PASS
3	1CYC , Fully charge	12.774	12.757	99.87%	184.82	184.86	0.00%	PASS
4	1CYC , Fully charge	12.772	12.763	99.93%	184.32	184.37	0.00%	PASS
5	25CYC , Fully charge	12.789	12.777	99.91%	183.26	183.21	0.03%	PASS
6	25CYC , Fully charge	12.780	12.768	99.91%	184.31	184.30	0.01%	PASS
7	25CYC , Fully charge	12.781	12.763	99.86%	182.51	182.50	0.01%	PASS
8	25CYC , Fully charge	12.786	12.772	99.89%	184.52	184.48	0.02%	PASS
Temperature, °C		20.3			Humidity, %RH		44.6	

Criteria:

*Batteries meet requirement regard mass loss was less than (0.5% , $M < 1g$; 0.2%, $1g \leq M \leq 75g$; 0.1%, $M > 75g$) and voltage after testing is not less than 90% of its voltage immediately prior to this procedure.

*No leakage, No venting, No disassembly, No rupture and no fire.

2.2.5 T.5 External Short circuit

Sample NO.	Sample Status	Max Battery Temperature(°C)	Result
1	1CYC , Fully charge	57.63	PASS
2	1CYC , Fully charge	57.23	PASS
3	1CYC , Fully charge	57.51	PASS
4	1CYC , Fully charge	56.95	PASS
5	25CYC , Fully charge	57.37	PASS
6	25CYC , Fully charge	57.10	PASS
7	25CYC , Fully charge	56.91	PASS
8	25CYC , Fully charge	57.43	PASS
Temperature, °C		21.6	Humidity, %RH
			42.5

Criteria:

- *All Batteries can meet requirement subjected external temperature does not exceed 170 °C.
- *All Batteries no disassembly, no rupture and no fire during the test and within six hours of this test.

2.2.6 T.6 Crush

Sample NO.	Sample Status	Max Cell Temperature (°C)	Result
9	1CYC,50% Capacity	20.41	PASS
10	1CYC,50% Capacity	20.73	PASS
11	1CYC,50% Capacity	20.39	PASS
12	1CYC,50% Capacity	20.55	PASS
13	1CYC,50% Capacity	20.77	PASS
14	25CYC,50% Capacity	20.33	PASS
15	25CYC,50% Capacity	20.78	PASS
16	25CYC,50% Capacity	20.59	PASS
17	25CYC,50% Capacity	20.32	PASS
18	25CYC,50% Capacity	20.57	PASS
Temperature, °C		24.6	Humidity, %RH
			49.5

Criteria:

- *All cells can meet requirement subjected external temperature does not exceed 170°C.
- *All cells no disassembly and no fire during the test and within six hours of this test.

2.2.7 T.7 Over Charge

Sample NO.	Sample Status	Result
1	1CYC, Fully charge	PASS
2	1CYC, Fully charge	PASS
3	1CYC, Fully charge	PASS
4	1CYC, Fully charge	PASS
5	25CYC, Fully charge	PASS
6	25CYC, Fully charge	PASS
7	25CYC, Fully charge	PASS
8	25CYC, Fully charge	PASS
Temperature, °C		19.8
Humidity, %RH		41.6

Criteria:

*All batteries can meet no disassembly and no fire during the test and within seven days after the test.

2.2.8 T.8 Forced Discharge

Sample NO.	Sample Status	Result	Sample NO.	Sample Status	Result
19	1CYC, Fully discharge	PASS	29	25CYC, Fully discharge	PASS
20	1CYC, Fully discharge	PASS	30	25CYC, Fully discharge	PASS
21	1CYC, Fully discharge	PASS	31	25CYC, Fully discharge	PASS
22	1CYC, Fully discharge	PASS	32	25CYC, Fully discharge	PASS
23	1CYC, Fully discharge	PASS	33	25CYC, Fully discharge	PASS
24	1CYC, Fully discharge	PASS	34	25CYC, Fully discharge	PASS
25	1CYC, Fully discharge	PASS	35	25CYC, Fully discharge	PASS
26	1CYC, Fully discharge	PASS	36	25CYC, Fully discharge	PASS
27	1CYC, Fully discharge	PASS	37	25CYC, Fully discharge	PASS
28	1CYC, Fully discharge	PASS	38	25CYC, Fully discharge	PASS
Temperature, °C		20.8	Humidity, %RH		40.8

Criteria:

*All cells no disassembly and no fire during the test and within seven days after the test.

--- End of Test report ---