

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-C31N2201-C1
Customer Name	ASUS
Product Name	Rechargeable Li-Polymer Battery Pack
Model Name	C31N2201
Test specification	ST/SG/AC.10/11/REV.7
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	1~46
Test Date	T.1/T.2/T.3/T.4/T.5/T.7 : 2022/3/1 ~ 2022/3/24 T.6/T.8 : 2021/3/31 (Quote the data of UN-C31N1842-C1)
Date of Test Report	2022/3/25
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: Will.Wei@dynapack.com.cn ZIP: 215200 Website: http://www.dynapack.com.tw

Description of Battery	
Model Name	C31N2201
Battery Type	Small Rechargeable Li-Polymer Battery Pack
Pack Configuration	3 Series / 1 Parallel
Nominal Voltage	11.55 Vdc
Rated Capacity(mAh/Wh)	3550mAh / 42Wh
Mass	0.180 kg
Pack Dimension(mm)	272.00*72.50*5.55
Cell Brand	CosMx
Cell model	CA485778G

Performed Tests		Results
UN38.3 T1	Altitude simulation	☒ PASS ☐ FAIL
UN38.3 T2	Thermal test	☒ PASS ☐ FAIL
UN38.3 T3	Vibration	☒ PASS ☐ FAIL
UN38.3 T4	Shock	☒ PASS ☐ FAIL
UN38.3 T5	External short circuit	☒ PASS ☐ FAIL
UN38.3 T6	Crush	☒ PASS ☐ FAIL
UN38.3 T7	Overcharge	☒ PASS ☐ FAIL
UN38.3 T8	Forced discharge	☒ PASS ☐ FAIL
Reference to assembled battery testing requirements:		
☒ Not Applicable ☐ UN38.3.3(f) ☐ UN38.3.3(g)		

Prepared By :

Checked By :

Approved By :

Cathy.Xu
 Engineer
 Cathy.Xu

Will.Wei
 Section Manager
 Will.Wei

Barton.Chen
 Senior Manager
 Barton.Chen

本報告未經本公司書面許可，不可部份複製

This document cannot be reproduced, except in full, without prior written permission of the Company
 Any unauthorized alteration, forgery or falsification of the content or appearance of this document
 is unlawful and offenders may be prosecuted to the fullest extent of the law

順達科技股份有限公司：桃園市龜山區崇善里文承路 188 號 13 樓 (Tel : 03-396-3399 ; Fax : 03-396-1166)

13F., No. 188, Wenhe Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

順達電子科技(蘇州)有限公司：江蘇省蘇州市吳江經濟開發區花港路 8 號 (Tel : 86-512-6340-8688)

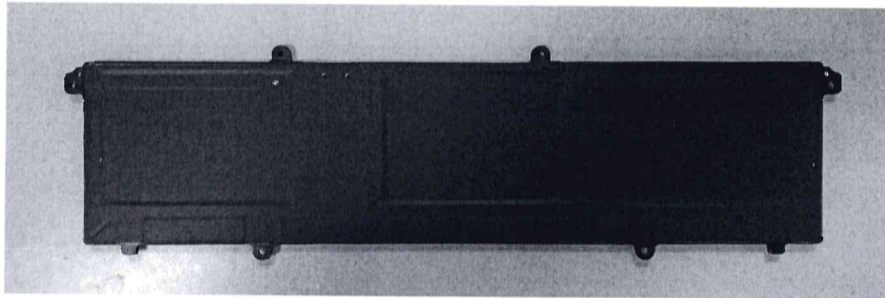
No. 8 Hua-Gang Road, WuJiang Economical and Technological Development
 Zone, Suzhou city, JiangSu. PRC

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 $\equiv$ 42Wh MODEL(型號/型号): C31N2201
 Questions? Please visit www.asus.com 3ICP5/58/78
 Rechargeable Li-Polymer Battery Pack
 二次鋰電池組 鋰離子電池組
 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	13.034	13.012	99.83%	179.97	179.99	0.00%	PASS
2	1CYC , Fully charge	13.036	13.016	99.85%	177.91	177.88	0.02%	PASS
3	1CYC , Fully charge	13.034	13.016	99.86%	177.87	177.89	0.00%	PASS
4	1CYC , Fully charge	13.033	13.013	99.85%	178.11	178.15	0.00%	PASS
5	25CYC , Fully charge	13.032	13.014	99.86%	177.46	177.44	0.01%	PASS
6	25CYC , Fully charge	13.034	13.011	99.82%	178.40	178.37	0.02%	PASS
7	25CYC , Fully charge	13.035	13.015	99.85%	178.87	178.85	0.01%	PASS
8	25CYC , Fully charge	13.035	13.017	99.86%	179.28	179.24	0.02%	PASS
Temperature, °C		23.6			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.

2.2.2 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	13.012	12.776	98.19%	179.99	179.98	0.01%	PASS
2	1CYC , Fully charge	13.016	12.778	98.17%	177.88	177.90	0.00%	PASS
3	1CYC , Fully charge	13.016	12.779	98.18%	177.89	177.91	0.00%	PASS
4	1CYC , Fully charge	13.013	12.779	98.20%	178.15	178.12	0.02%	PASS
5	25CYC , Fully charge	13.014	12.780	98.20%	177.44	177.45	0.00%	PASS
6	25CYC , Fully charge	13.011	12.777	98.20%	178.37	178.40	0.00%	PASS
7	25CYC , Fully charge	13.015	12.774	98.15%	178.85	178.81	0.02%	PASS
8	25CYC , Fully charge	13.017	12.784	98.21%	179.24	179.20	0.02%	PASS
Temperature, °C		22.8			Humidity, %RH		44.7	

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	12.776	12.724	99.59%	179.98	179.94	0.02%	PASS
2	1CYC , Fully charge	12.778	12.718	99.53%	177.90	177.93	0.00%	PASS
3	1CYC , Fully charge	12.779	12.725	99.58%	177.91	177.86	0.03%	PASS
4	1CYC , Fully charge	12.779	12.721	99.55%	178.12	178.13	0.00%	PASS
5	25CYC , Fully charge	12.780	12.726	99.58%	177.45	177.46	0.00%	PASS
6	25CYC , Fully charge	12.777	12.725	99.59%	178.40	178.40	0.00%	PASS
7	25CYC , Fully charge	12.774	12.722	99.59%	178.81	178.81	0.00%	PASS
8	25CYC , Fully charge	12.784	12.725	99.54%	179.20	179.24	0.00%	PASS
Temperature, °C		23.0			Humidity, %RH		45.9	

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.

2.2.4 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	12.724	12.662	99.51%	179.94	179.92	0.01%	PASS
2	1CYC , Fully charge	12.718	12.656	99.51%	177.93	177.95	0.00%	PASS
3	1CYC , Fully charge	12.725	12.658	99.47%	177.86	177.86	0.00%	PASS
4	1CYC , Fully charge	12.721	12.652	99.46%	178.13	178.18	0.00%	PASS
5	25CYC , Fully charge	12.726	12.661	99.49%	177.46	177.51	0.00%	PASS
6	25CYC , Fully charge	12.725	12.661	99.50%	178.40	178.38	0.01%	PASS
7	25CYC , Fully charge	12.722	12.655	99.47%	178.81	178.82	0.00%	PASS
8	25CYC , Fully charge	12.725	12.660	99.49%	179.24	179.26	0.00%	PASS
Temperature, °C		23.5			Humidity, %RH		44.3	

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	57.48	PASS
2	1CYC , Fully charge	57.93	PASS
3	1CYC , Fully charge	57.76	PASS
4	1CYC , Fully charge	57.49	PASS
5	25CYC , Fully charge	57.94	PASS
6	25CYC , Fully charge	57.76	PASS
7	25CYC , Fully charge	57.54	PASS
8	25CYC , Fully charge	57.42	PASS
Temperature, °C		23.6	Humidity, %RH
			47.6

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 (Quote the data of UN-C31N1842-C1)

Sample NO.	Sample Status	Max Cell Temperature (°C)	Result
9	1CYC,50% Capacity	21.07	PASS
10	1CYC,50% Capacity	21.92	PASS
11	1CYC,50% Capacity	21.68	PASS
12	1CYC,50% Capacity	21.09	PASS
13	1CYC,50% Capacity	21.69	PASS
14	25CYC,50% Capacity	21.06	PASS
15	25CYC,50% Capacity	21.11	PASS
16	25CYC,50% Capacity	21.71	PASS
17	25CYC,50% Capacity	21.16	PASS
18	25CYC,50% Capacity	22.00	PASS
Temperature, °C		21.3	Humidity, %RH
			56.7

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
19	1CYC, Fully charge	PASS
20	1CYC, Fully charge	PASS
21	1CYC, Fully charge	PASS
22	1CYC, Fully charge	PASS
23	25CYC, Fully charge	PASS
24	25CYC, Fully charge	PASS
25	25CYC, Fully charge	PASS
26	25CYC, Fully charge	PASS
Temperature, °C		23.3
Humidity, %RH		46.5

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 (Quote the data of UN-C31N1842-C1)

Sample NO.	Sample Status	Result	Sample NO.	Sample Status	Result
27	1CYC, Fully discharge	PASS	37	25CYC, Fully discharge	PASS
28	1CYC, Fully discharge	PASS	38	25CYC, Fully discharge	PASS
29	1CYC, Fully discharge	PASS	39	25CYC, Fully discharge	PASS
30	1CYC, Fully discharge	PASS	40	25CYC, Fully discharge	PASS
31	1CYC, Fully discharge	PASS	41	25CYC, Fully discharge	PASS
32	1CYC, Fully discharge	PASS	42	25CYC, Fully discharge	PASS
33	1CYC, Fully discharge	PASS	43	25CYC, Fully discharge	PASS
34	1CYC, Fully discharge	PASS	44	25CYC, Fully discharge	PASS
35	1CYC, Fully discharge	PASS	45	25CYC, Fully discharge	PASS
36	1CYC, Fully discharge	PASS	46	25CYC, Fully discharge	PASS
Temperature, °C		22.0	Humidity, %RH		55.4

Criteria:

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

--- End of Test report ---