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-C41N2402-AAWJ
Customer Name	ASUS
Product Name	LI-ION BATTERY PACK
Model Name	C41N2402
Test specification	ST/SG/AC.10/11/Rev.8
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	2024/5/2 ~ 2024/5/28
Date of Test Report	2024/5/28
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	C41N2402
Battery Type	Small LI-ION BATTERY PACK
Pack Configuration	4 Series / 1 Parallel
Nominal Voltage	15.4 Vdc
Rated Capacity(mAh/Wh)	4416mAh / 70Wh
Mass	0.260 kg
Pack Dimension(mm)	286*101.25*5.40
Cell Brand	ATL
Cell model	4742C4

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 :
Engineer	Senior Engineer	Senior Manager
Cathy.Xu	Sky.Jiang	Barton.Chen

順達科技股份有限公司：桃園市龜山區興善里文禾路 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

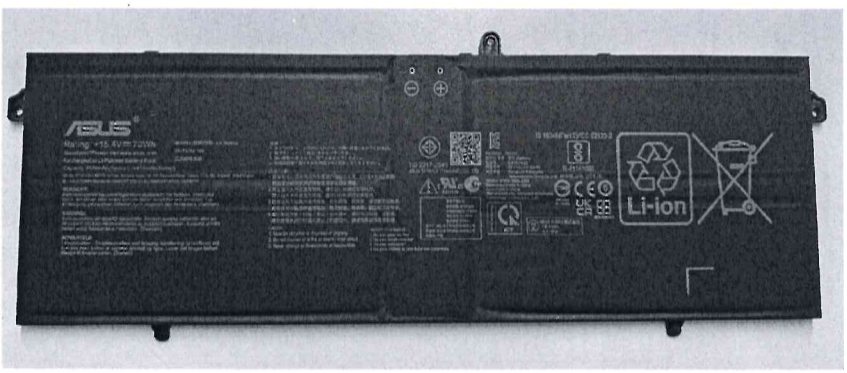
1. Test Equipment

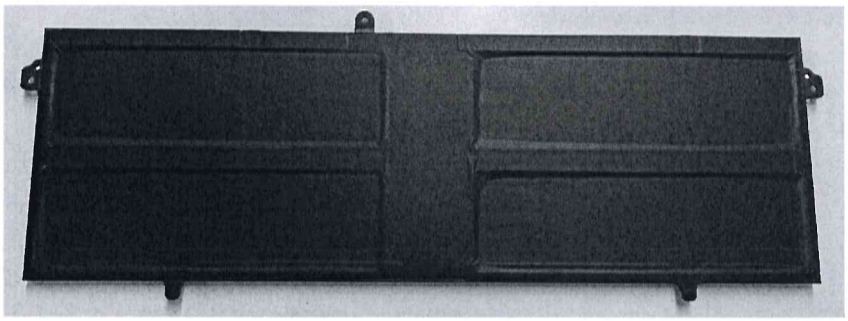
Inst. No.	Description	Series No	Function/Range
WJ6014	Learning Machine	D14106-2	20 V / 10 A
WJ6015	Chamber	6609K	-40～150°C
WJ9004	Learning Machine	D20131-7	20V / 15A
WJ9005	Chamber	MEA1504-010	0~100℃,10%~98%RH
WJ6103	Electronic Scales	0929016	0.2~600g,Accuracy 0.01g
WJ6108	3560 AC mΩMeter	051139050	0~5/50 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
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

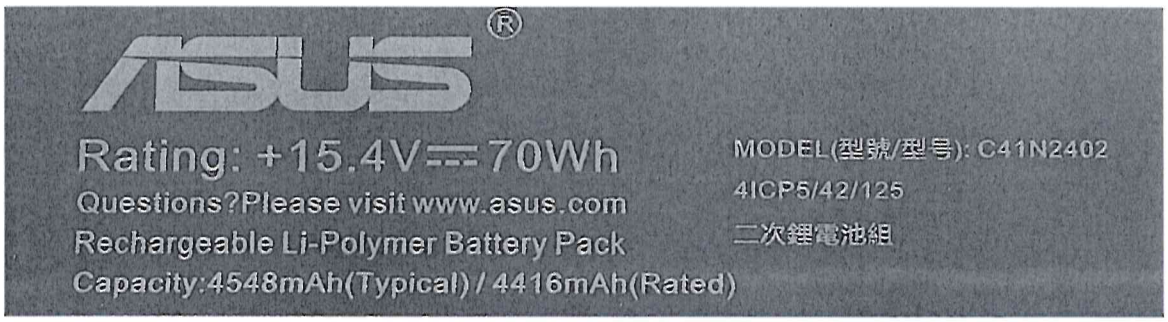
順達科技股份有限公司：桃園市龜山區興善里文禾路 188 號 13 樓 (Tel：03-396-3399；Fax：03-396-1166)
13F., No. 188, Wenhe Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
順達電子科技(蘇州)有限公司：江蘇省蘇州市吳江經濟開發區花港路 8 號 (Tel：86-512-6340-8688)
No. 8 Hua-Gang Road, WuJiang Economical and Technological Development
Zone, Suzhou city, JiangSu. PRC

2. Detail records as below：

2.1 Photograph







順達科技股份有限公司：桃園市龜山區興善里文禾路 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

2.2 Test Data:

2.2.1 T.1 Altitude

Sample No.	Sample Status	OCV(V) Before	OCV(V) After	Voltage Residual (%)	Mass(g) Before	Mass(g) After	Mass Loss (%)	Result
1	1CYC，Fully charge	17.430	17.413	99.90%	257.17	257.17	0.00%	PASS
2	1CYC，Fully charge	17.415	17.396	99.89%	257.74	257.72	0.01%	PASS
3	1CYC，Fully charge	17.443	17.426	99.90%	258.89	258.88	0.00%	PASS
4	1CYC，Fully charge	17.432	17.413	99.89%	258.61	258.62	0.00%	PASS
5	25CYC，Fully charge	17.436	17.417	99.89%	259.99	259.97	0.01%	PASS
6	25CYC，Fully charge	17.419	17.400	99.89%	259.40	259.37	0.01%	PASS
7	25CYC，Fully charge	17.435	17.416	99.89%	258.33	258.32	0.00%	PASS
8	25CYC，Fully charge	17.431	17.412	99.89%	257.28	257.28	0.00%	PASS
Temperature, °C		24.3			Humidity, %RH		55.3	

Criteria:

*Batteries meet requirement regard mass loss was less than (0.5% ,M<1g;0.2%, 1g ≤ M ≤ 75 g; 0.1%,M > 75 g) 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 Status	OCV(V) Before	OCV(V) After	Voltage Residual (%)	Mass(g) Before	Mass(g) After	Mass Loss (%)	Result
1	1CYC，Fully charge	17.413	17.063	97.99%	257.17	257.18	0.00%	PASS
2	1CYC，Fully charge	17.396	17.060	98.07%	257.72	257.77	0.00%	PASS
3	1CYC，Fully charge	17.426	17.074	97.98%	258.88	258.89	0.00%	PASS
4	1CYC，Fully charge	17.413	17.068	98.02%	258.62	258.66	0.00%	PASS
5	25CYC，Fully charge	17.417	17.076	98.04%	259.97	259.99	0.00%	PASS
6	25CYC，Fully charge	17.400	17.054	98.01%	259.37	259.38	0.00%	PASS
7	25CYC，Fully charge	17.416	17.082	98.08%	258.32	258.37	0.00%	PASS
8	25CYC，Fully charge	17.412	17.067	98.02%	257.28	257.29	0.00%	PASS
Temperature, °C		23.9			Humidity, %RH		56.2	

Criteria:

*Batteries meet requirement regard mass loss was less than (0.5% ,M<1g;0.2%, 1g ≤ M ≤ 75 g; 0.1%,M > 75 g) 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.

順速科技股份有限公司：桃園市龜山區樂善里文禾路 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.)
順速電子科技(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

2.2.3 T.3 Vibration

Sample No.	Sample Status	OCV(V) Before	OCV(V) After	Voltage Residual (%)	Mass(g) Before	Mass(g) After	Mass Loss (%)	Result
1	1CYC，Fully charge	17.063	17.032	99.82%	257.18	257.14	0.02%	PASS
2	1CYC，Fully charge	17.060	17.033	99.84%	257.77	257.80	0.00%	PASS
3	1CYC，Fully charge	17.074	17.043	99.82%	258.89	258.87	0.01%	PASS
4	1CYC，Fully charge	17.068	17.034	99.80%	258.66	258.68	0.00%	PASS
5	25CYC，Fully charge	17.076	17.044	99.81%	259.99	260.00	0.00%	PASS
6	25CYC，Fully charge	17.054	17.023	99.82%	259.38	259.37	0.00%	PASS
7	25CYC，Fully charge	17.082	17.056	99.85%	258.37	258.39	0.00%	PASS
8	25CYC，Fully charge	17.067	17.028	99.77%	257.29	257.27	0.01%	PASS
Temperature, °C		24.0			Humidity, %RH		54.7	

Criteria:

*Batteries meet requirement regard mass loss was less than (0.5% ,M<1g;0.2%, 1g ≤ M ≤ 75 g; 0.1%,M > 75 g) 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 Status	OCV(V) Before	OCV(V) After	Voltage Residual (%)	Mass(g) Before	Mass(g) After	Mass Loss (%)	Result
1	1CYC，Fully charge	17.032	17.010	99.87%	257.14	257.14	0.00%	PASS
2	1CYC，Fully charge	17.033	17.018	99.91%	257.80	257.79	0.00%	PASS
3	1CYC，Fully charge	17.043	17.026	99.90%	258.87	258.87	0.00%	PASS
4	1CYC，Fully charge	17.034	17.010	99.86%	258.68	258.68	0.00%	PASS
5	25CYC，Fully charge	17.044	17.020	99.86%	260.00	260.04	0.00%	PASS
6	25CYC，Fully charge	17.023	16.999	99.86%	259.37	259.36	0.00%	PASS
7	25CYC，Fully charge	17.056	17.029	99.84%	258.39	258.35	0.02%	PASS
8	25CYC，Fully charge	17.028	17.018	99.94%	257.27	257.28	0.00%	PASS
Temperature, °C		24.3			Humidity, %RH		58.3	

Criteria:

*Batteries meet requirement regard mass loss was less than (0.5% ,M<1g;0.2%, 1g ≤ M ≤ 75 g; 0.1%,M > 75 g) 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.

順達科技股份有限公司：桃園市龜山區樂善里文禾路 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

2.2.5 T.5 External Short circuit

Sample NO.	Sample Status	Max Battery Temperature(℃)	Result
1	1CYC，Fully charge	57.10	PASS
2	1CYC，Fully charge	57.11	PASS
3	1CYC，Fully charge	57.37	PASS
4	1CYC，Fully charge	57.46	PASS
5	25CYC，Fully charge	57.18	PASS
6	25CYC，Fully charge	57.51	PASS
7	25CYC，Fully charge	56.91	PASS
8	25CYC，Fully charge	57.51	PASS
Temperature, °C	24.6	Humidity, %RH	45.9

Criteria:

*All Batteries can meet requirement subjected external temperature does not exceed170 ℃.

*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 (℃)	Result
9	1CYC,50% Capacity	23.92	PASS
10	1CYC,50% Capacity	23.86	PASS
11	1CYC,50% Capacity	23.98	PASS
12	1CYC,50% Capacity	23.93	PASS
13	1CYC,50% Capacity	23.85	PASS
14	25CYC,50% Capacity	23.95	PASS
15	25CYC,50% Capacity	23.93	PASS
16	25CYC,50% Capacity	23.85	PASS
17	25CYC,50% Capacity	23.84	PASS
18	25CYC,50% Capacity	23.91	PASS
Temperature, °C	23.9	Humidity, %RH	48.2

Criteria:

*All cells can meet requirement subjected external temperature does not exceed 170℃.

*All cells no disassembly and no fire during the test and within six hours of this test.

順速科技股份有限公司：桃園市龜山區興善里文禾路 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.)
順速電子科技(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

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	24.3	Humidity, %RH	48.6

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	24.2	Humidity, %RH	50.3

Criteria:

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

--- End of Test report ---

順達科技股份有限公司：桃園市龜山區樂善里文禾路 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