

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-C41N2311-A1
Customer Name	ASUS
Product Name	LI-ION BATTERY PACK
Model Name	C41N2311
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	2023/11/24 ~ 2023/12/22
Date of Test Report	2023/12/25
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: Cathy.Xu@dynapack.com.cn ZIP: 215200 Website: http://www.dynapack.com.tw

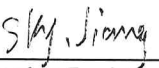
Description of Battery	
Model Name	C41N2311
Battery Type	Small LI-ION BATTERY PACK
Pack Configuration	4 Series / 1 Parallel
Nominal Voltage	15.56 Vdc
Rated Capacity(mAh/Wh)	5000mAh / 80Wh
Mass	0.275 kg
Pack Dimension(mm)	250*42.16*12.8
Cell Brand	ATL
Cell model	5742B1

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)		

Prepared By :


 Engineer
 Cathy.Xu

Checked By :


 Senior Engineer
 Sky.Jiang

Approved By :



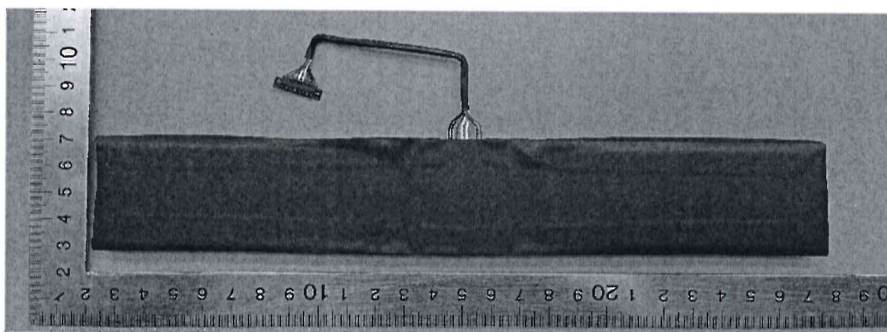
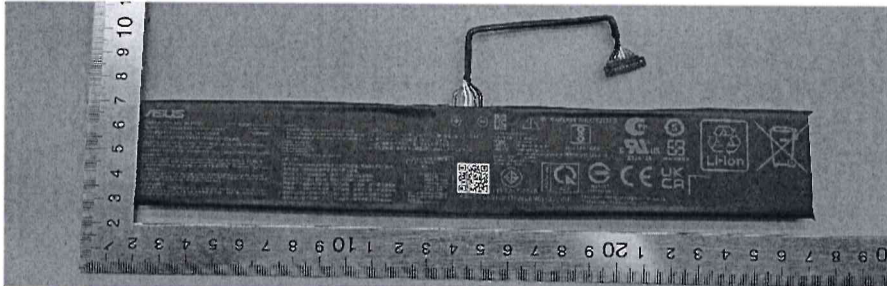
 Senior Manager
 Barton.Chen

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: +15.56V \approx 80Wh	MODEL(型號/型号): C41N2311
Questions? Please visit www.asus.com	4ICP6/42/111
Rechargeable Li-Polymer Battery Pack	二次鋰電池組
Capacity: 5150mAh(Typical) / 5000mAh(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	17.731	17.726	99.97%	273.87	273.91	0.00%	PASS
2	1CYC , Fully charge	17.757	17.752	99.97%	274.85	274.81	0.01%	PASS
3	1CYC , Fully charge	17.727	17.718	99.95%	274.58	274.57	0.00%	PASS
4	1CYC , Fully charge	17.752	17.745	99.96%	273.67	273.72	0.00%	PASS
5	25CYC , Fully charge	17.729	17.722	99.96%	274.02	274.03	0.00%	PASS
6	25CYC , Fully charge	17.755	17.750	99.97%	272.75	272.78	0.00%	PASS
7	25CYC , Fully charge	17.738	17.731	99.96%	273.84	273.81	0.01%	PASS
8	25CYC , Fully charge	17.743	17.738	99.97%	273.81	273.83	0.00%	PASS
Temperature, °C		23.9			Humidity, %RH		45.3	

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.

2.2.2 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	17.726	17.410	98.22%	273.91	273.90	0.00%	PASS
2	1CYC , Fully charge	17.752	17.436	98.22%	274.81	274.80	0.00%	PASS
3	1CYC , Fully charge	17.718	17.399	98.20%	274.57	274.57	0.00%	PASS
4	1CYC , Fully charge	17.745	17.433	98.24%	273.72	273.76	0.00%	PASS
5	25CYC , Fully charge	17.722	17.412	98.25%	274.03	274.02	0.00%	PASS
6	25CYC , Fully charge	17.750	17.438	98.24%	272.78	272.76	0.01%	PASS
7	25CYC , Fully charge	17.731	17.421	98.25%	273.81	273.77	0.01%	PASS
8	25CYC , Fully charge	17.738	17.422	98.22%	273.83	273.83	0.00%	PASS
Temperature, °C		21.7			Humidity, %RH		41.5	

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	17.410	17.372	99.78%	273.90	273.89	0.00%	PASS
2	1CYC , Fully charge	17.436	17.384	99.70%	274.80	274.77	0.01%	PASS
3	1CYC , Fully charge	17.399	17.357	99.76%	274.57	274.54	0.01%	PASS
4	1CYC , Fully charge	17.433	17.396	99.79%	273.76	273.72	0.01%	PASS
5	25CYC , Fully charge	17.412	17.375	99.79%	274.02	274.00	0.01%	PASS
6	25CYC , Fully charge	17.438	17.403	99.80%	272.76	272.73	0.01%	PASS
7	25CYC , Fully charge	17.421	17.374	99.73%	273.77	273.75	0.01%	PASS
8	25CYC , Fully charge	17.422	17.371	99.71%	273.83	273.84	0.00%	PASS
Temperature, °C		21.5			Humidity, %RH		41.5	

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	17.372	17.351	99.88%	273.89	273.85	0.01%	PASS
2	1CYC , Fully charge	17.384	17.356	99.84%	274.77	274.76	0.00%	PASS
3	1CYC , Fully charge	17.357	17.333	99.86%	274.54	274.58	0.00%	PASS
4	1CYC , Fully charge	17.396	17.370	99.85%	273.72	273.71	0.00%	PASS
5	25CYC , Fully charge	17.375	17.349	99.85%	274.00	274.02	0.00%	PASS
6	25CYC , Fully charge	17.403	17.389	99.92%	272.73	272.72	0.00%	PASS
7	25CYC , Fully charge	17.374	17.358	99.91%	273.75	273.75	0.00%	PASS
8	25CYC , Fully charge	17.371	17.350	99.88%	273.84	273.84	0.00%	PASS
Temperature, °C		21.3			Humidity, %RH		42.5	

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	56.91	PASS
2	1CYC , Fully charge	57.63	PASS
3	1CYC , Fully charge	57.09	PASS
4	1CYC , Fully charge	57.18	PASS
5	25CYC , Fully charge	56.71	PASS
6	25CYC , Fully charge	57.14	PASS
7	25CYC , Fully charge	57.44	PASS
8	25CYC , Fully charge	56.75	PASS
Temperature, °C		20.4	Humidity, %RH
			40.9

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	20.79	PASS
10	1CYC,50% Capacity	20.38	PASS
11	1CYC,50% Capacity	20.66	PASS
12	1CYC,50% Capacity	20.53	PASS
13	1CYC,50% Capacity	20.53	PASS
14	25CYC,50% Capacity	20.79	PASS
15	25CYC,50% Capacity	20.78	PASS
16	25CYC,50% Capacity	20.67	PASS
17	25CYC,50% Capacity	20.41	PASS
18	25CYC,50% Capacity	20.49	PASS
Temperature, °C		20.5	Humidity, %RH
			40.8

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		20.1
Humidity, %RH		40.6

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		19.6	Humidity, %RH		40.3

Criteria:

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

--- End of Test report ---