

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-C22N2312-C1
Customer Name	ASUS
Product Name	LI-ION BATTERY PACK
Model Name	C22N2312
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	2024/1/2 ~ 2024/1/27
Date of Test Report	2024/1/29
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

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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)

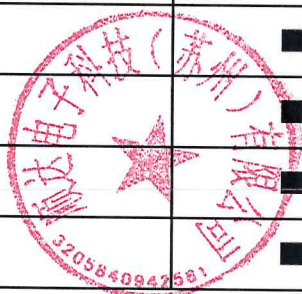
13F., No. 188, Wenhe Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

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

Description of Battery	
Model Name	C22N2312
Battery Type	Small LI-ION BATTERY PACK
Pack Configuration	2 Series / 2 Parallel
Nominal Voltage	7.78 Vdc
Rated Capacity(mAh/Wh)	8984mAh / 72Wh
Mass	0.260 kg
Pack Dimension(mm)	250.00*109.50*4.55
Cell Brand	CosMX
Cell model	CA3953B4P

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:

Not Applicable
 UN38.3.3(f)
 UN38.3.3(g)

Prepared By :

Checked By :

Approved By :

Cathy.Xu
 Engineer
 Cathy.Xu

Yafeng.Zhu
 Engineer
 Yafeng.Zhu

Barton.Chen
 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

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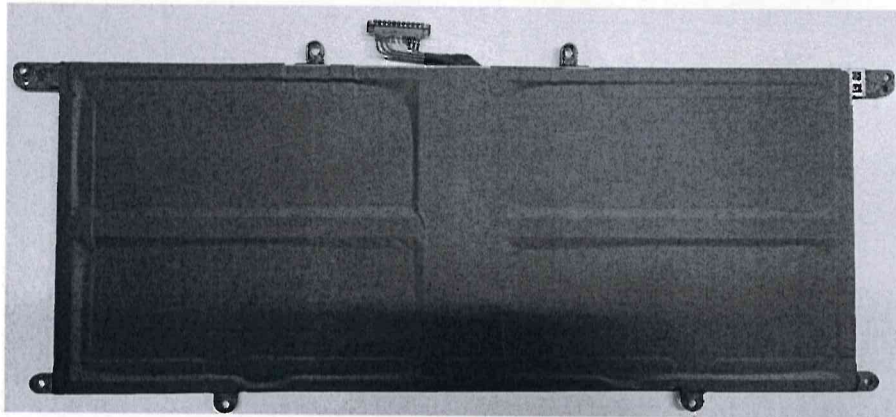
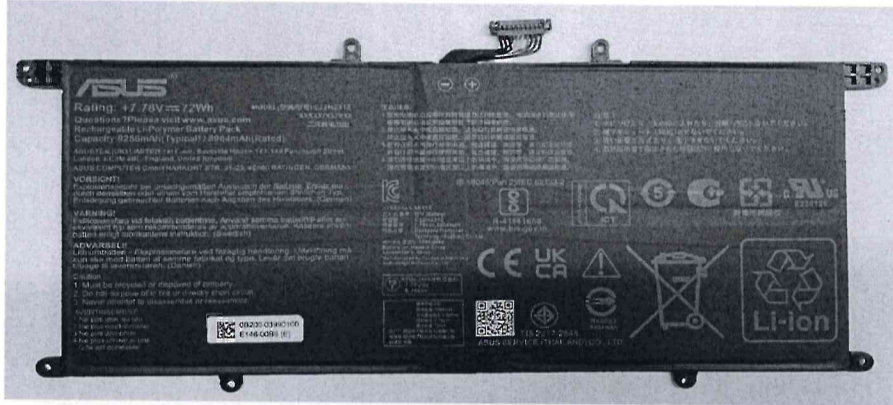
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Zone, Suzhou city, JiangSu. PRC

2. Detail records as below :

2.1 Photograph



ASUS[®]

Rating: +7.78V \equiv 72Wh
 Questions? Please visit www.asus.com
 Rechargeable Li-Polymer Battery Pack
 Capacity: 9256mAh (Typical) / 8984mAh (Rated)

MODEL (型號/型号): C22N2312
 2ICP4/53/115-2
 二次鋰電池組

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	8.881	8.877	99.95%	257.44	257.48	0.00%	PASS
2	1CYC , Fully charge	8.872	8.868	99.95%	259.44	259.44	0.00%	PASS
3	1CYC , Fully charge	8.875	8.871	99.95%	258.42	258.40	0.01%	PASS
4	1CYC , Fully charge	8.881	8.877	99.95%	259.73	259.71	0.01%	PASS
5	25CYC , Fully charge	8.869	8.864	99.94%	259.95	259.97	0.00%	PASS
6	25CYC , Fully charge	8.869	8.865	99.95%	258.08	258.08	0.00%	PASS
7	25CYC , Fully charge	8.876	8.872	99.95%	259.63	259.67	0.00%	PASS
8	25CYC , Fully charge	8.863	8.858	99.94%	259.71	259.72	0.00%	PASS
Temperature, °C		23.5			Humidity, %RH		42.6	

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	OCV(V)	OCV(V)	Voltage Residual (%)	Mass(g)	Mass(g)	Mass Loss (%)	Result
	Status	Before	After		Before	After		
1	1CYC , Fully charge	8.877	8.707	98.08%	257.48	257.44	0.02%	PASS
2	1CYC , Fully charge	8.868	8.701	98.12%	259.44	259.45	0.00%	PASS
3	1CYC , Fully charge	8.871	8.709	98.17%	258.40	258.44	0.00%	PASS
4	1CYC , Fully charge	8.877	8.713	98.15%	259.71	259.73	0.00%	PASS
5	25CYC , Fully charge	8.864	8.702	98.17%	259.97	259.96	0.00%	PASS
6	25CYC , Fully charge	8.865	8.695	98.08%	258.08	258.12	0.00%	PASS
7	25CYC , Fully charge	8.872	8.703	98.10%	259.67	259.68	0.00%	PASS
8	25CYC , Fully charge	8.858	8.691	98.11%	259.72	259.68	0.02%	PASS
Temperature, °C		21.0			Humidity, %RH		41.3	

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.

2.2.3 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	8.707	8.690	99.80%	257.44	257.44	0.00%	PASS
2	1CYC , Fully charge	8.701	8.680	99.76%	259.45	259.45	0.00%	PASS
3	1CYC , Fully charge	8.709	8.691	99.79%	258.44	258.39	0.02%	PASS
4	1CYC , Fully charge	8.713	8.693	99.77%	259.73	259.76	0.00%	PASS
5	25CYC , Fully charge	8.702	8.679	99.74%	259.96	259.92	0.02%	PASS
6	25CYC , Fully charge	8.695	8.673	99.75%	258.12	258.14	0.00%	PASS
7	25CYC , Fully charge	8.703	8.686	99.80%	259.68	259.66	0.01%	PASS
8	25CYC , Fully charge	8.691	8.668	99.74%	259.68	259.68	0.00%	PASS
Temperature, °C		21.5			Humidity, %RH		40.2	

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	8.690	8.682	99.91%	257.44	257.44	0.00%	PASS
2	1CYC , Fully charge	8.680	8.674	99.93%	259.45	259.47	0.00%	PASS
3	1CYC , Fully charge	8.691	8.679	99.86%	258.39	258.36	0.01%	PASS
4	1CYC , Fully charge	8.693	8.680	99.85%	259.76	259.74	0.01%	PASS
5	25CYC , Fully charge	8.679	8.669	99.88%	259.92	259.96	0.00%	PASS
6	25CYC , Fully charge	8.673	8.663	99.88%	258.14	258.12	0.01%	PASS
7	25CYC , Fully charge	8.686	8.672	99.84%	259.66	259.67	0.00%	PASS
8	25CYC , Fully charge	8.668	8.655	99.85%	259.68	259.65	0.01%	PASS
Temperature, °C		22.5			Humidity, %RH		42.2	

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	57.18	PASS
2	1CYC , Fully charge	57.45	PASS
3	1CYC , Fully charge	57.01	PASS
4	1CYC , Fully charge	57.10	PASS
5	25CYC , Fully charge	57.40	PASS
6	25CYC , Fully charge	57.34	PASS
7	25CYC , Fully charge	57.44	PASS
8	25CYC , Fully charge	57.18	PASS
Temperature, °C		21.5	Humidity, %RH
			43.0

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	20.50	PASS
10	1CYC,50% Capacity	20.34	PASS
11	1CYC,50% Capacity	20.35	PASS
12	1CYC,50% Capacity	20.30	PASS
13	1CYC,50% Capacity	20.62	PASS
14	25CYC,50% Capacity	20.58	PASS
15	25CYC,50% Capacity	20.42	PASS
16	25CYC,50% Capacity	20.78	PASS
17	25CYC,50% Capacity	20.59	PASS
18	25CYC,50% Capacity	20.79	PASS
Temperature, °C		20.5	Humidity, %RH
			41.9

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		21.6	Humidity, %RH
			43.2

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		21.4	Humidity, %RH		42.9

Criteria:

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

--- End of Test report ---