

## UN 38.3 Test Report

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

<b>Test Report Number</b>	UN-C21N2017-A1
<b>Customer Name</b>	ASUS
<b>Product Name</b>	Rechargeable Li-Polymer Battery Pack
<b>Model Name</b>	C21N2017
<b>Test specification</b>	ST/SG/AC.10/11/REV.6/Amend.1
<b>UN38.3 Test Item</b>	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)
<b>Test sample No</b>	UN-C21N2017-A1 - 01~46
<b>Test Date</b>	2020/9/30 ~ 2020/10/31
<b>Date of Test Report</b>	2020/11/2
<b>Product Manufacturer &amp; Test Laboratory</b>	Dynapack Electronic Technology (Suzhou) Co., Ltd
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No. 8 Hua-Gang Road, WuJiang Economical and Technological Development Zone, Suzhou city, JiangSu. PRC

Description of Battery	
Model Name	C21N2017
Battery Type	Small Rechargeable Li-Polymer Battery Pack
Pack Configuration	2 Series / 1 Parallel
Nominal Voltage	7.74 Vdc
Rated Capacity(mAh/Wh)	5270mAh / 42Wh
Mass	168 g
Pack Dimension(mm)	208.00(L)*145.60(W)*4.41(T)
Cell model	3859D4

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)

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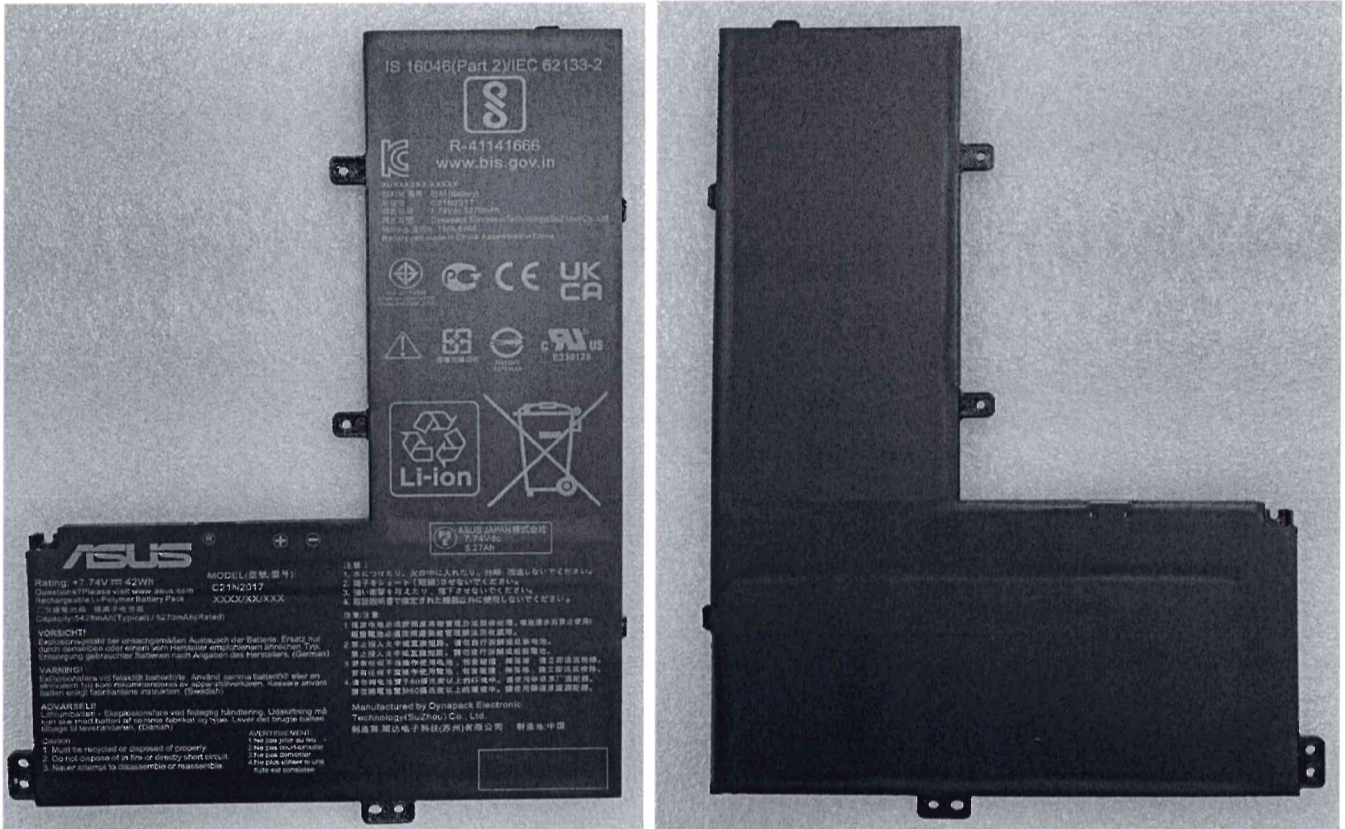


## 1. Test Equipment

Inst. No.	Description	Series No	Function/Range
WJ6014	Learning Machine	D14106-2	20 V / 10 A
WJ6015	Chamber	6609K	-40~150°C
WJ6102	Electronic Scales	07093410	0~600g,Accuracy 0.01g
WJ6108	3560 AC mΩMeter	051139050	0~5/50 V /30mΩ-3kΩ
WJ6105	Vacuum Machine	GS55-221	-76~0cmHg
WJ6190	Thermal shock1	7537KTK	150°C ~-65°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
WJ6112	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	- 45.0 to 250.0°C

## 2. Detail records as below :

### 2.1 Photograph



**Rating: +7.74V == 42Wh**  
**Questions? Please visit [www.asus.com](http://www.asus.com)**  
**Rechargeable Li-Polymer Battery Pack**  
 二次鋰電池組 鋰離子電池組  
**Capacity: 5428mAh(Typical) / 5270mAh(Rated)**

**MODEL(型號/型号):**  
**C21N2017**  
**XXXX/XX/XXX**

## 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	8.786	8.784	99.97%	168.04	167.97	0.04%	PASS
2	1CYC , Fully charge	8.785	8.781	99.96%	168.02	168.04	0.01%	PASS
3	1CYC , Fully charge	8.788	8.786	99.98%	168.00	168.01	0.01%	PASS
4	1CYC , Fully charge	8.783	8.781	99.98%	168.02	167.98	0.02%	PASS
5	25CYC , Fully charge	8.790	8.787	99.97%	167.97	168.00	0.02%	PASS
6	25CYC , Fully charge	8.782	8.779	99.96%	167.96	167.96	0.00%	PASS
7	25CYC , Fully charge	8.784	8.780	99.96%	167.99	168.04	0.03%	PASS
8	25CYC , Fully charge	8.790	8.787	99.97%	168.01	168.00	0.01%	PASS
Temperature, °C		24.3		Humidity, %RH		53.6		

#### Criteria:

\*Batteries meet requirement regard mass loss was less than (0.5% , $M < 1g$ ; 0.2% ,  $1g \leq M \leq 75 g$ ; 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	8.784	8.649	98.47%	167.97	167.96	0.01%	PASS
2	1CYC , Fully charge	8.781	8.666	98.69%	168.04	168.00	0.02%	PASS
3	1CYC , Fully charge	8.786	8.652	98.48%	168.01	168.01	0.00%	PASS
4	1CYC , Fully charge	8.781	8.632	98.31%	167.98	168.03	0.03%	PASS
5	25CYC , Fully charge	8.787	8.641	98.34%	168.00	168.03	0.02%	PASS
6	25CYC , Fully charge	8.779	8.662	98.67%	167.96	168.04	0.05%	PASS
7	25CYC , Fully charge	8.780	8.629	98.28%	168.04	167.99	0.03%	PASS
8	25CYC , Fully charge	8.787	8.646	98.39%	168.00	168.00	0.00%	PASS
Temperature, °C		23.8		Humidity, %RH		52.6		

#### Criteria:

\*Batteries meet requirement regard mass loss was less than (0.5% , $M < 1g$ ; 0.2% ,  $1g \leq M \leq 75 g$ ; 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	8.649	8.620	99.66%	167.96	167.98	0.01%	PASS
2	1CYC , Fully charge	8.666	8.633	99.62%	168.00	168.03	0.02%	PASS
3	1CYC , Fully charge	8.652	8.618	99.60%	168.01	167.98	0.02%	PASS
4	1CYC , Fully charge	8.632	8.598	99.61%	168.03	167.97	0.04%	PASS
5	25CYC , Fully charge	8.641	8.615	99.70%	168.03	168.01	0.01%	PASS
6	25CYC , Fully charge	8.662	8.631	99.64%	168.04	168.04	0.00%	PASS
7	25CYC , Fully charge	8.629	8.603	99.70%	167.99	168.00	0.01%	PASS
8	25CYC , Fully charge	8.646	8.619	99.69%	168.00	167.98	0.01%	PASS
Temperature, °C		23.5		Humidity, %RH		54.8		

#### 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	8.620	8.543	99.12%	167.98	167.96	0.01%	PASS
2	1CYC , Fully charge	8.633	8.575	99.33%	168.03	167.99	0.02%	PASS
3	1CYC , Fully charge	8.618	8.537	99.07%	167.98	168.01	0.02%	PASS
4	1CYC , Fully charge	8.598	8.527	99.17%	167.97	168.01	0.02%	PASS
5	25CYC , Fully charge	8.615	8.540	99.14%	168.01	167.99	0.01%	PASS
6	25CYC , Fully charge	8.631	8.552	99.09%	168.04	167.97	0.04%	PASS
7	25CYC , Fully charge	8.603	8.526	99.11%	168.00	167.97	0.02%	PASS
8	25CYC , Fully charge	8.619	8.537	99.05%	167.98	168.02	0.02%	PASS
Temperature, °C		23.5		Humidity, %RH		54.8		

#### 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	57.02	PASS
2	1CYC , Fully charge	57.11	PASS
3	1CYC , Fully charge	57.48	PASS
4	1CYC , Fully charge	57.08	PASS
5	25CYC , Fully charge	57.09	PASS
6	25CYC , Fully charge	57.33	PASS
7	25CYC , Fully charge	57.10	PASS
8	25CYC , Fully charge	57.09	PASS
Temperature, °C		23.8	Humidity, %RH
			53.8

#### 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	23.95	PASS
10	1CYC,50% Capacity	22.00	PASS
11	1CYC,50% Capacity	23.10	PASS
12	1CYC,50% Capacity	23.72	PASS
13	1CYC,50% Capacity	23.13	PASS
14	25CYC,50% Capacity	23.14	PASS
15	25CYC,50% Capacity	23.01	PASS
16	25CYC,50% Capacity	23.11	PASS
17	25CYC,50% Capacity	23.91	PASS
18	25CYC,50% Capacity	23.09	PASS
Temperature, °C		23.7	Humidity, %RH
			54.2

#### 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	Charge Voltage(V)	Charge Current(A)	Result
19	1CYC, Fully charge	17.8000	12.1420	PASS
20	1CYC, Fully charge	17.8000	12.1420	PASS
21	1CYC, Fully charge	17.8000	12.1420	PASS
22	1CYC, Fully charge	17.8000	12.1420	PASS
23	25CYC, Fully charge	17.8000	12.1420	PASS
24	25CYC, Fully charge	17.8000	12.1420	PASS
25	25CYC, Fully charge	17.8000	12.1420	PASS
26	25CYC, Fully charge	17.8000	12.1420	PASS
Temperature, °C		24.0	Humidity, %RH	55.3

### 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
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		23.9	Humidity, %RH		53.6

### Criteria:

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

--- End of Test report ---