

# Battery Pack Test Report (UN38.3)

Customer: Lenovo

Pack Model: L17C6P51

Nominal voltage: 11.4V

Typical capacity: 8684mAh/99Wh

Rated: 8440mAh/96Wh

Configuration: 3S2P

Customer P/N: SB10T83147

Celxpert P/N: 921300306

Cell Type: Coslight CA595490G-C 4342mAh

Apr.16.2018

Approved by

Reviewed by

Prepared by



## 1. Figure photo of the pack.







PS:此報告僅針對送檢樣品有效

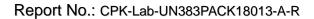
The test report is valid for the tested samples only.



2. UN38	2. UN38.3 Test Report											
Test Period	2018/03/28~2	2018/04/15	Test Spec.	ST/SG/AC	.10/11/Rev.6/Amend.1							
Parts Name	Parts Name Battery Pack		NB	Quantity	Pack 16PCS/Cell 30pcs							

#### 2.1 Test Summary

Item	Test Item	Test Result	Details
T1	Altitude simulation test (UN38.3-1)	Pass	Page 5
T2	Thermal test (UN38.3-2)	Pass	Page 6
T3	Vibration test (UN38.3-3)	Pass	Page 7
T4	Shock test (UN38.3-4)	Pass	Page 8
T5	Short Circuit test (UN38.3-5)	Pass	Page 9
T6	Crush Test (UN38.3-6)	Pass	Page 9
T7	Overcharge test (UN38.3-7)	Pass	Page 10
T8	Forced discharge test (UN38.3-8)	Pass	Page 11





### 2.2 Test sample list

No.	Pack S/N	Test item	No.	Cell Num.	Test item
1	Sample No:1/16	38.3.1~5	1	Coslight CA595490G-C 4342mAh	38.3.6
2	Sample No:2/16	38.3.1~5	2	Coslight CA595490G-C 4342mAh	38.3.6
3	Sample No:3/16	38.3.1~5	3	Coslight CA595490G-C 4342mAh	38.3.6
4	Sample No:4/16	38.3.1~5	4	Coslight CA595490G-C 4342mAh	38.3.6
5	Sample No:5/16	38.3.1~5	5	Coslight CA595490G-C 4342mAh	38.3.6
6	Sample No:6/16	38.3.1~5	6	Coslight CA595490G-C 4342mAh	38.3.6
7	Sample No:7/16	38.3.1~5	7	Coslight CA595490G-C 4342mAh	38.3.6
8	Sample No:8/16	38.3.1~5	8	Coslight CA595490G-C 4342mAh	38.3.6
9	Sample No:9/16	38.3.7	9	Coslight CA595490G-C 4342mAh	38.3.6
10	Sample No:10/16	38.3.7	10	Coslight CA595490G-C 4342mAh	38.3.6
11	Sample No:11/16	38.3.7	11	Coslight CA595490G-C 4342mAh	38.3.8
12	Sample No:12/16	38.3.7	12	Coslight CA595490G-C 4342mAh	38.3.8
13	Sample No:13/16	38.3.7	13	Coslight CA595490G-C 4342mAh	38.3.8
14	Sample No:14/16	38.3.7	14	Coslight CA595490G-C 4342mAh	38.3.8
15	Sample No:15/16	38.3.7	15	Coslight CA595490G-C 4342mAh	38.3.8
16	Sample No:16/16	38.3.7	16	Coslight CA595490G-C 4342mAh	38.3.8
			17	Coslight CA595490G-C 4342mAh	38.3.8
			18	Coslight CA595490G-C 4342mAh	38.3.8
			19	Coslight CA595490G-C 4342mAh	38.3.8
			20	Coslight CA595490G-C 4342mAh	38.3.8
			21	Coslight CA595490G-C 4342mAh	38.3.8
			22	Coslight CA595490G-C 4342mAh	38.3.8
			23	Coslight CA595490G-C 4342mAh	38.3.8
			24	Coslight CA595490G-C 4342mAh	38.3.8
			25	Coslight CA595490G-C 4342mAh	38.3.8
			26	Coslight CA595490G-C 4342mAh	38.3.8
			27	Coslight CA595490G-C 4342mAh	38.3.8
			28	Coslight CA595490G-C 4342mAh	38.3.8
			29	Coslight CA595490G-C 4342mAh	38.3.8
			30	Coslight CA595490G-C 4342mAh	38.3.8



#### 2.3 Test result

Altitude   Tit   Curve   Simulation (UN38.3-1)	Item	Test Item		T	est specificati	ion	Jud	ge criteria	Samp	le(s)		
Test Equipment   数位電表 Q153, 電子天平 Q090, 真空烘箱 Q0443	T1	Simulation	i v t 1-2.E c a 1-3.\	n fully char weight is m patteries vo ecorded. Batteries sh of 11.6Kpa at ambient /acuum is measured.	ged state. A easured. The oltage are monall be stored or less for a temperature released. All The charged	Ill batteries le charged leasured and d at a pressure t least six hou le (20±5)°C. I cells weight is d cell voltage a	(<0.1%) no venti disasser rupture r Battery 10%.	, no leakage, ng, no mbly, no and no fire. voltage drop <	fully charged (Pack#1~4) 4 packs are a cycled endin charged stat	25 times g in fully		
Test Equipment   数位電表 Q153, 電子天平 Q090, 真空烘箱 Q0443	Test Per	iod	Start: 2018/03/28 End: 2018/03/28									
Major Problem												
Commendation   The packs pass the test.   Altitude Simulation Test on Charged Packs	•	•	-		-, t , /\	, ~~~, <del>, , ,</del>	-//\dagger	·•				
No.   Before   After   Voltage residue   mass loss   OCV   Weight   Volt   Weight   Volt   Weight   Volt   Weight   Volt   Vol	•		_									
No.   Before   After   voltage residue   mass loss   other even   voltage residue   voltage residue   other even   other even   voltage residue   voltage residue   other even   voltage residue   voltage residue   other even   voltage residue			The peaks page the test									
Before         After         voltage residue         mass loss           No.         OCV (V)         Weight (V)         Volt (W)         Weight (%)         Volt (%)         Weight (%)         OCV (%)         Weight (%)         OCV (%)         Weight (%)         OCV (%)         Weight (%)         OCV (%)         Volt (%)         OCV (%)         Weight (%)         OCV (%)         Volt (%)         OCV (%)         Volt (%)         Volt (%)         OCV (%)         O												
Before         After         voltage residue         mass loss           No.         OCV         Weight (V)         CV         Weight (%)         Volt (%)         Weight (%)         other even (%)           1         12.513         435.15         12.511         435.14         99.98%         0.00%         O           2         12.534         435.68         12.533         435.67         99.99%         0.00%         O           3         12.504         435.19         12.503         435.18         99.99%         0.00%         O           4         12.519         435.19         12.516         435.18         99.98%         0.00%         O           5         12.399         435.23         12.397         435.22         99.98%         0.00%         O           6         12.391         435.27         12.388         435.26         99.98%         0.00%         O           7         12.384         435.18         12.383         435.17         99.99%         0.00%         O           8         12.383         435.21         12.379         435.20         99.97%         0.00%         O           Note: L-Leakag												
No. OCV Weight OCV Weight Volt Weight (V) (g) (%) (%) (%)  1 12.513 435.15 12.511 435.14 99.98% 0.00% O  2 12.534 435.68 12.533 435.67 99.99% 0.00% O  3 12.504 435.19 12.503 435.18 99.99% 0.00% O  4 12.519 435.19 12.516 435.18 99.98% 0.00% O  5 12.399 435.23 12.397 435.22 99.98% 0.00% O  6 12.391 435.27 12.388 435.26 99.98% 0.00% O  7 12.384 435.18 12.383 435.17 99.99% 0.00% O  8 12.383 435.21 12.379 435.20 99.97% 0.00% O  Note: L-Leakage; V-Venting; D-Disassembly; R-Rupture; F-Fire						Altitude Simulati	on Test on Ch	narged Packs				
CCV   Weight   CCV   Weight   Volt				Ве	efore	Afte	r	voltage residue	mass loss			
1 12.513 435.15 12.511 435.14 99.98% 0.00% O 2 12.534 435.68 12.533 435.67 99.99% 0.00% O 3 12.504 435.19 12.503 435.18 99.99% 0.00% O 4 12.519 435.19 12.516 435.18 99.98% 0.00% O 5 12.399 435.23 12.397 435.22 99.98% 0.00% O 6 12.391 435.27 12.388 435.26 99.98% 0.00% O 7 12.384 435.18 12.383 435.17 99.99% 0.00% O 8 12.383 435.21 12.379 435.20 99.97% 0.00% O Note: L-Leakage; V-Venting; D-Disassembly; R-Rupture; F-Fire			No.				_			other event		
Raw Data  3 12.504 435.19 12.503 435.18 99.99% 0.00% 0 4 12.519 435.19 12.516 435.18 99.98% 0.00% 0 5 12.399 435.23 12.397 435.22 99.98% 0.00% 0 6 12.391 435.27 12.388 435.26 99.98% 0.00% 0 7 12.384 435.18 12.383 435.17 99.99% 0.00% 0 8 12.383 435.21 12.379 435.20 99.97% 0.00% 0 Note: L-Leakage; V-Venting; D-Disassembly; R-Rupture; F-Fire			1							0		
Raw Data  4 12.519 435.19 12.516 435.18 99.98% 0.00% 0 5 12.399 435.23 12.397 435.22 99.98% 0.00% 0 6 12.391 435.27 12.388 435.26 99.98% 0.00% 0 7 12.384 435.18 12.383 435.17 99.99% 0.00% 0 8 12.383 435.21 12.379 435.20 99.97% 0.00% 0 Note: L-Leakage; V-Venting; D-Disassembly; R-Rupture; F-Fire			2		435.68	12.533	435.67		0.00%	0		
Raw Data    5   12.399   435.23   12.397   435.22   99.98%   0.00%   O									_			
Raw Data    6   12.391   435.27   12.388   435.26   99.98%   0.00%   O     7   12.384   435.18   12.383   435.17   99.99%   0.00%   O     8   12.383   435.21   12.379   435.20   99.97%   0.00%   O     Note: L-Leakage; V-Venting; D-Disassembly; R-Rupture; F-Fire									_			
Raw Data    7									_			
Raw Data         8         12.383         435.21         12.379         435.20         99.97%         0.00%         O           Note: L-Leakage; V-Venting; D-Disassembly; R-Rupture; F-Fire			-									
Note: L-Leakage ; V-Venting ; D-Disassembly ; R-Rupture ; F-Fire	Rav	w Data							_			
			Note: I	L-Leakage : V-\	/enting : D-Disas	sembly : R-Rupture	: F-Fire					
					•			<u> </u>				



		rporation respectively of Read ended Mexico to Min										
Item	Test Item			est specificati				Judge criteria	Sample(s)			
T2	Thermal test (UN38.3-2)	2-2.F	The maximum time interval between test temperature extremes is 30 minutes.  2.Repeat 2-1 for 10 times. Then store the packs at ambient for 24 hours. All packs weight are measured. The charged battery voltage are measured and recorded.  tart: 2018/03/30  End: 2018/04/05  contact the packs at ambient for 24 hours. All packs weight are measured and recorded.					1%), no leakage, renting, no ssembly, no ure and no fire. ery voltage drop <	4 packs are fully charged 4 packs are 2 cycled ending charged state #5~8)	(Pack#1~4) 25 times g in fully		
Test Per	iod	Star	t: 2018/03	3/30	End	d: 2018	3/04	<del>/</del> /05				
Test Equ	ipment	數位			<sup>2</sup> Q090,	冷熱衝	擊栈	₹ Q0446				
Major Pr	oblem	-			· · · · · · · · · · · · · · · · · · ·	<u> </u>						
Warning		-										
	nendation	The	packs pa	ass the tes	it.							
		No.	OCV Be	efore Weight	OCV	fter Weig	ht	voltage residue Volt	mass loss Weight	other event		
			(V)	(g)	(V)	(g)		(%)	(%)			
		2	12.511 12.533	435.14 435.67	12.442 12.457	435.1 435.6	_	99.45% 99.39%	0.01%	0		
		3	12.503	435.18	12.428	435.1		99.40%	0.00%	0		
		4	12.516	435.18	12.442	435.1	7	99.41%	0.00%	0		
		5	12.397	435.22	12.326	435.2		99.43%	0.01%	0		
		7	12.388	435.26 435.17	12.313 12.315	435.2 435.1		99.39% 99.45%	0.01%	0		
		8	12.379	435.20	12.304	435.1		99.39%	0.01%	0		
Rav	w Data			/enting ; D-Disass , No Venting , No [								



Item	Test Item			Test spe	cification			Judge crite	eria	Sa	ample(s)	
Т3	Vibration test (UN38.3-3)	v a v la	-1. Packs are firmly secured to the platform of the vibration machine without distorting the packs in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of 3 mutually perpendicular to the terminal face.  -2. The logarithmic frequency sweep is as follows: 7-18 Hz → 1gn 18-50 Hz → 0.8mm amplitude 50-200 Hz → 8gn -3. All packs weight are measured. The charged packs voltage are measured and recorded.  Start: 2018/04/09  End: 2018/04/10								4 packs are first cycle in fully charged (Pack#1~4)  4 packs are 25 times cycled ending in fully charged state (Pack #5~8)	
Test Per	iod	Sta	rt: 2018/0	14/09	E	nd: 2018/	/04/10	)				
Test Equ	ipment	數位	:電表 Q15	3, 電子天	乎 Q090,	振動測試	機 Q	300				
Major Pr		-			· · ·							
Warning		-										
	nendation	The	packs pa	ass the te	st.							
		No.	OCV	fore Weight	OCV	ter Weight	volt	Volt	W	ss loss /eight	other event	
		1	(V) 12.442	(g) 435.12	(V) 12.435	(g) 435.10		(%) 99.94%		(%) .00%	0	
		2	12.457	435.65	12.450	435.63		99.94%		.00%	0	
		3	12.428	435.16	12.420	435.15		99.94%		.00%	0	
		5	12.442	435.17 435.20	12.434 12.318	435.15 435.18		99.94% 99.94%		.00%	0	
		6	12.326	435.24	12.318	435.22		99.94%		.00%	0	
		7	12.315	435.15	12.306	435.12		99.93%	0	.01%	0	
Rav	w Data	8 12.304 435.18 12.297 435.16 99.94% 0.00% O										
				/enting ; D-Disas , No Venting , No			No Fire					



Item	Test Item			Test specific	ation		J	udge criteria	Sam	ple(s)		
T4	Shock test (UN38.3-4)	4-2. I 0 0 t t t r 4-3. A	by means of a rigid mount, which will support all mounting surfaces.  2. Packs shall be subjected to a half-sine shock of peak acceleration 150gn and pulse duration of 6 milliseconds. Each pack shall be subjected to 3 shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicularly mounting positions of the pack for a total of 18 shocks.  3. All batteries weight are measured. The charged cell voltage are measured and recorded.  tart: 2018/04/11  End: 2018/04/11  £位電表 Q153,電子天平 Q090,衝擊測試機 Q154							4 packs are first cycle in fully charged (Pack#1~4) 4 packs are 25 times cycled ending in fully charged state (Pack #5~8)		
Test Per	iod	Star	t: 2018/04	/11	End:	2018	/04/11					
Test Equ	ipment											
Major Pr	•	<b>女</b> 人 III	- 3/10	-, -, -, /	, 2000, 121	4-04 6	1/2/ -	· <del>-</del> ·				
Warning		_										
	nendation		naaka n	ass the te	o+							
		No.	OCV (V)	fore Weight (g)	Shock T  Af	ter Wei	ight	Packs  voltage residue  Volt (%)	mass loss Weight (%)	other event		
		1	12.435	435.10	12.429	435.		99.95%	0.00%	0		
		2	12.450	435.63	12.445	435.	.62	99.96%	0.00%	0		
		3	12.420	435.15	12.415	435.		99.96%	0.00%	0		
		5	12.434	435.15 435.18	12.428 12.314	435. 435.		99.95% 99.97%	0.00%	0		
		6	12.318	435.18	12.314	435.		99.94%	0.00%	0		
		7	12.306	435.12	12.300	435.		99.95%	0.00%	0		
		8	12.297	435.16	12.292	435.	.15	99.96%	0.00%	0		
Rav	w Data				sembly ; R-Rupture Disassembly , No		No Fire					



Item	Test Item		Test s	pecification			Judge criteria	Sample(s)	
Т5	Short Circuit Test (UN38.3-5)	ext 5-2.Wh sho wir 5-4. The or t	cks are placed in erior packs teme en packs exterior orted by connect e of resistance les short was con the cell temperaticks are observed	n to a (57±4) perature are or reach (57± ting terminals less than 100 tinued for moture return to	monitored 4)°C, they are s with a coppe m Ohm. ore than 1hour o 57°C. The	disa exp r smo	rupture, no assembly, no blosion, no fire, no oke. Packs erior peak aperature <170°C.	4 packs are first cycle fully charged (Pack#1~4) 4 packs are 25 times cycled ending in fully charged state (Pack#5~8)	s y
Test Peri	iod	Start:	2018/04/12		End: 2018	3/04/1	15		
Test Equ	ipment	數位電	表 Q153, 資	料收集器(	Q075, 烘箱	Q17	1		
Recomm	endation	The p	acks pass th	ne test.					
Rav	w Data  Test Item	No. 1 1 2 3 4 5 6 7 8 Note: D-	Circuit Test on C  Max. Temp.(°C)  55.26  54.18  54.79  55.68  53.49  56.78  55.18  54.91  Disassembly ; R-I  Tes	Other even O O O O O O O O O O O O C O O C O O C O C	t e	+	Judge criteria		
Т6	Crush test (UN38.3-6)	(A 9.1 k (61±2.5 6-2.Cel (The ce	Kg mass is to be become onto the sale of t	e dropped fro ample.) 8mm, Execu with a 13 KN	m a height of ion crush test with the crus	n	cell does not exce 170°C and there i disassembly and r within 6 hours of thest.	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged stat to 50%.	ed er ing
T6	(UN38.3-6)	(A 9.1 k (61±2.5 6-2.Cel (The ce tester.	(g mass is to be s)cm onto the sa l's diameter < 1 ells are crushed	e dropped fro ample.) 8mm, Execu with a 13 KN	m a height of ion crush test with the crus	n sed.)	cell does not exce 170°C and there i disassembly and r within 6 hours of the test.	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged sta	ed er ing
	(UN38.3-6)	(A 9.1 k (61±2.5 6-2.Cel (The ce tester. Start: 數位電	Kg mass is to be solven onto the sall's diameter < 1 ells are crushed Once the force $\frac{2018/04/04}{24}$	e dropped fro ample.) 8mm, Execu with a 13 KN is obtained i	ion crush test with the crus t is to be relea	n sed.) 3/04/(	cell does not exce 170°C and there i disassembly and r within 6 hours of the test.	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged stat to 50%. (Pack #6~10)	ed er ing
Test Peri Test Equ	(UN38.3-6)	(A 9.1 k (61±2.5 6-2.Cel (The ce tester. Start: 數位電	(g mass is to be s)cm onto the sa l's diameter < 1 ells are crushed Once the force	e dropped fro ample.) 8mm, Execu with a 13 KN is obtained i	m a height of ion crush test with the crust is to be released.  End: 2018	n sed.) <u>3/04/(</u> 試驗	cell does not exce 170℃ and there i disassembly and r within 6 hours of the test. 04 機 Q437/撞擊測	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged stat to 50%. (Pack #6~10)	ed er ing
Test Peri Test Equ	(UN38.3-6)  iod  iipment	(A 9.1 k (61±2.5 6-2.Cel (The contester. Start: 數位電 The C	Kg mass is to be solven onto the sall's diameter < 1 ells are crushed Once the force 2018/04/04 意表 Q153, 資Cells pass the	e dropped fro ample.) 8mm, Execu with a 13 KN is obtained i *料收集器 e test. Crush T	m a height of ion crush test with the crust is to be released.  End: 2018  Q152,擠壓	n sed.) <u>8/04/(</u> 試驗	cell does not exce 170℃ and there i disassembly and r within 6 hours of the test.	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged state to 50%. (Pack #6~10)	ed er ing
Test Peri Test Equ	(UN38.3-6)  iod  iipment	(A 9.1 k (61±2.5 6-2.Cel (The ce tester. Start: 數位電 The C	Kg mass is to be some onto the sall's diameter < 1. ells are crushed Once the force 2018/04/04 意表 Q153,資Cells pass the Max. Temp.	e dropped fro ample.) 8mm, Execu with a 13 KN is obtained i *料收集器 e test. Crush T	m a height of ion crush test with the crust is to be released.  End: 2018 Q152, 擠壓 est on 50% er event	n sed.) 3/04/( <b>Cha</b> Io.	cell does not exce 170℃ and there i disassembly and r within 6 hours of the test. 04 機 Q437/撞擊測 arged Cells Max. Temp.(℃)	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged state to 50%. (Pack #6~10)	ed er ing
Test Peri Test Equ	(UN38.3-6)  iod  iipment	(A 9.1 k (61±2.5 6-2.Cel (The ce tester. Start: 數位電 The C	Kg mass is to be some onto the sall's diameter < 1 ells are crushed Once the force 2018/04/04 是表 Q153,資Cells pass the Max. Temp. 21.36	e dropped fro ample.) 8mm, Execu with a 13 KN is obtained i *料收集器 e test. Crush T	m a height of ion crush test with the crust is to be released.  End: 2018 Q152, 擠壓 est on 50% er event 100	n sed.) 8/04/0 試驗 Cha Io. 1	cell does not exce 170°C and there i disassembly and r within 6 hours of the test.  04 機 Q437/撞擊測  arged Cells  Max. Temp.(°C) 20.46	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged state to 50%. (Pack #6~10)	ed er ing
Test Peri Test Equ Recomm	iod lipment nendation	(A 9.1 k (61±2.5 6-2.Cel (The contester. Start: 數位電 The C	(g mass is to be so)cm onto the sa il's diameter < 1 ells are crushed Once the force 2018/04/04 意表 Q153,資Cells pass the Max. Temp. 21.36 20.46	e dropped fro ample.) 8mm, Execu with a 13 KN is obtained i *料收集器 e test. Crush T	m a height of a height of the crush test with the crush is to be released by the crush is the crush is to be released by the crush is the	n sed.) 3/04/0 試驗 Cha Io. 1	cell does not exce 170℃ and there i disassembly and r within 6 hours of the test.  04  機 Q437/撞擊測  arged Cells  Max. Temp.(℃)  20.46  21.59	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged state to 50%. (Pack #6~10)   i	ed er ing
Test Peri Test Equ Recomm	(UN38.3-6)  iod  iipment	(A 9.1 k (61±2.5 6-2.Cel (The ce tester. 数位電 The C	Kg mass is to be some onto the sall's diameter < 1. ells are crushed Once the force $\frac{2018/04/04}{28 \pm Q153}$ Cells pass the Max. Temp. $\frac{21.36}{20.46}$	e dropped fro ample.) 8mm, Execu with a 13 KN is obtained i *料收集器 e test. Crush T	m a height of sion crush test with the crust is to be released is to be released.  End: 2018 Q152, 擠壓 est on 50% er event 1000000000000000000000000000000000000	n sed.) 3/04/( Cha Io. 1 6 7	cell does not exce 170℃ and there i disassembly and r within 6 hours of the test.  04 機 Q437/撞擊測  arged Cells  Max. Temp.(℃)  20.46  21.59  20.81	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged state to 50%. (Pack #6~10)    Other event  O  O  O	ed er ing
Test Peri Test Equ Recomm	iod lipment nendation	(A 9.1 k (61±2.5 6-2.Cel (The ce tester. Start: 數位電 The C	Kg mass is to be some onto the sall's diameter < 1. ells are crushed Once the force 2018/04/04 全表 Q153,資Cells pass the 21.36 20.46 21.89 21.47	e dropped fro ample.) 8mm, Execu with a 13 KN is obtained i *料收集器 e test. Crush T	m a height of sion crush test with the crust is to be released in the sist of	n sed.) 3/04/( 試驗: To. 1 6 7 8	cell does not exce 170℃ and there i disassembly and r within 6 hours of the test.  04  機 Q437/撞擊測  arged Cells  Max. Temp.(℃)  20.46  21.59  20.81  20.75	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged state to 50%. (Pack #6~10)	ed er ing
Test Peri Test Equ Recomm	iod lipment nendation	(A 9.1 k (61±2.5 6-2.Cel (The ce tester. Start: 數位電 The C	Kg mass is to be some onto the sall's diameter < 1. ells are crushed Once the force $\frac{2018/04/04}{28 \pm Q153}$ Cells pass the Max. Temp. $\frac{21.36}{20.46}$	e dropped from the ample.)  8mm, Executivith a 13 KN is obtained in the ample.  *料收集器 e test.  Crush T (°C) Other	m a height of a height of a height of the crush test with the crush is to be released is to be released at the crush is	n sed.) 3/04/( 試驗 Cha Io. 1 6 7 8 9	cell does not exce 170℃ and there i disassembly and r within 6 hours of the test.  04  機 Q437/撞擊測  arged Cells  Max. Temp.(℃) 20.46 21.59 20.81 20.75 20.38	cycle in charg states to 50% (Pack#1~5) 5 cells are afte 25 cycles end in charged state to 50%. (Pack #6~10)    Other event  O  O  O	ed er ing



Energy Corporation Report No.: CFR-Lab-0N383FACK18013-A-K												
Item	Test Item		Te	st specification		Judge criteria	Sample(s)					
Т7	Overcharge test (UN38.3-7)	red 7-2.The (a) W mo the bat (b) W tha tim 7-3. Tes	commended maxing minimum voltage //hen the Spec's report than 18V, the new lesser of two times there or 22V. //hen the Spec's report 18V, the minimum of the street maximum of t	commended charg im voltage of the to charge voltage. ucted at ambient to	narge current. e as follows: ge voltage is not f the test shall be narge voltage of the ge voltage is more est shall be 1.2	No disassembly, no fire within seven days of the test.	4 packs are first cycle in fully charged (Pack#9~12) 4 packs are 25 times cycled ending in fully charged state (Pack #13~16)					
Test Per	riod		art: 2018/03/23 End: 2018/03/28									
Test Equ	ipment	數位電	表 Q153, 資	料收集器 Q078	,電源供應器 Q	148/Q149/Q15	0					
Major Pı	roblem	-										
Warning	Point	-										
Recomn	Recommendation The packs pass the test.											
		No.  9 10 11 12 13 14 15 16	Charge Voltage(V)	Charge Current(A)	Max. Temp.(°0 20.16 21.49 20.79 21.46 20.38 21.47 21.38 20.58	C) Othe	r event  O O O O O O O O O					
Ka	w Data	Note:	D-Disassemb	ly;F-Fire / O	-No Disassembl	y ,No Fire						



Item	Test Item			Test specification		Jı	udge criteria	Sample(s)		
Т8	Forced discharge test (UN38.3-8)	conne initial	No disassembly, no fire within seven days after the test.  No disassembly, no fire within seven days after the test.  No disassembly, no fire within seven days after the test.  Indicator of the test							
Test Per	iod	Start	: 2018/03/29	End: 20	018/0	3/30		,		
Test Equ	ipment	數位	電表 Q153,	資料收集器 Q160,	電源	供應器 Q14	7/Q236/Q23	37		
Major Pr	oblem	-								
Warning		-								
	nendation	The	packs pass	the test						
		Ford	ed discharge are fi	rst cycle in fully discharged Other event	Forced No.	d discharge are at		Other event		
		11	49.83	Other event	21	51.26		Other event		
		12	48.72	0	22	53.48		0		
		13	45.16	0	23	49.41		0		
		14 15	47.59 48.29	0	24 25	48.36 47.26		0		
		16	47.26	0	26	46.58		0		
		17	45.79	0	27	52.48		0		
		18 19	52.46 55.27	0	28 29	51.37 52.68		0		
		20	53.69	0	30	51.73		0		
		Note:D	-Disassembly ; F-Fi	re / O-No Disassembly , No Fi	re					
Ra	w Data									