

Battery Pack Test Report UN38.3

Customer: Lenovo

Pack Model: L17C3P52

Nominal voltage: 11.1V

Nominal capacity: 4120mAh/45Wh

Configuration: 3S1P

Customer P/N: SB10K97613

Celxpert P/N: 921300140

Cell Type: Coslight CA595490 4120mAh

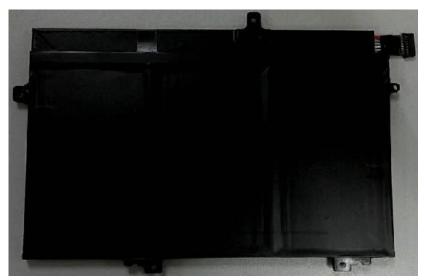
Jan. 19. 2018

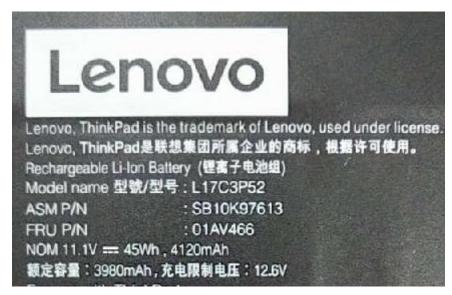
Approved by 实验室
Prepared by A M A



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.



1.UN38	1.UN38.3 Test Report										
Test Period	2017/06/07~2	2017/06/23	Test Spec.	ST/SG/AC.	10/11/Rev.5 Amend.1&2						
Parts Name	Battery Pack	Application	NB	Quantity	Pack 16PCS/Cell 25pcs						

1. 1Test Summary

Item	Test Item	Test Result	Details
T1	Altitude simulation test (UN38.3-1)	Pass	Page 9
T2	Thermal test (UN38.3-2)	Pass	Page 10
Т3	Vibration test (UN38.3-3)	Pass	Page 11
T4	Shock test (UN38.3-4)	Pass	Page 12
T5	Short Circuit test (UN38.3-5)	Pass	Page 13
T6	Crush Test (UN38.3-6)	Pass	Page 13
T7	Overcharge test (UN38.3-7)	Pass	Page 14
T8	Forced discharge test (UN38.3-8)	Pass	Page 15

The battery pack passes UN38.3 test.





1.2 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 CA595490 4120mAh	38.3.6
2	Sample No:2/16	38.3.1~5	2	Coslight CA595490 4120mAh	38.3.6
3	Sample No:3/16	38.3.1~5	3	Coslight CA595490 4120mAh	38.3.6
4	Sample No:4/16	38.3.1~5	4	Coslight CA595490 4120mAh	38.3.6
5	Sample No:5/16	38.3.1~5	5	Coslight CA595490 4120mAh	38.3.6
6	Sample No:6/16	38.3.1~5	6	Coslight CA595490 4120mAh	38.3.8
7	Sample No:7/16	38.3.1~5	7	Coslight CA595490 4120mAh	38.3.8
8	Sample No:8/16	38.3.1~5	8	Coslight CA595490 4120mAh	38.3.8
9	Sample No:9/16	38.3.7	9	Coslight CA595490 4120mAh	38.3.8
10	Sample No:10/16	38.3.7	10	Coslight CA595490 4120mAh	38.3.8
11	Sample No:11/16	38.3.7	11	Coslight CA595490 4120mAh	38.3.8
12	Sample No:12/16	38.3.7	12	Coslight CA595490 4120mAh	38.3.8
13	Sample No:13/16	38.3.7	13	Coslight CA595490 4120mAh	38.3.8
14	Sample No:14/16	38.3.7	14	Coslight CA595490 4120mAh	38.3.8
15	Sample No:15/16	38.3.7	15	Coslight CA595490 4120mAh	38.3.8
16	Sample No:16/16	38.3.7	16	Coslight CA595490 4120mAh	38.3.8
			17	Coslight CA595490 4120mAh	38.3.8
			18	Coslight CA595490 4120mAh	38.3.8
			19	Coslight CA595490 4120mAh	38.3.8
			20	Coslight CA595490 4120mAh	38.3.8
			21	Coslight CA595490 4120mAh	38.3.8
			22	Coslight CA595490 4120mAh	38.3.8
			23	Coslight CA595490 4120mAh	38.3.8
			24	Coslight CA595490 4120mAh	38.3.8
			25	Coslight CA595490 4120mAh	38.3.8



1.3 Test result

1.3 Test result										
Item	Test Item		Te	st specificatio	n	Judo	ge criteria	Sample(s)		
T1	Altitude Simulation (UN38.3-1)	1-2.E	patteries are patteries who charged bareasured a satteries slow 11.6 Kpa patteries at an C. Jacuum is measured.	or less for an abient tempe released. All	50 times, state. All sured. The ge are d. d. at a pressur least six erature 20+/-5 cells weight if cell voltage	no leakag no disass rupture ar Battery vo e 10%.	e, no venting, embly, no	4 packs are standard charged (Pack#1~4) 4 packs 50 cycled ending in fully charged states (Pack#5~8)		
Test Per	iod		t: 2017/06		End:2017	/06/07				
Test Equ	ipment				² Q090, 真3		6			
Major Pr			C - C - C - C - C - C - C - C -	-, ~ 1 /C		-/ / //				
		-								
Warning		The	hattan, r	a alca na a	the test					
Recomm	nendation	rne	ballery p	oacks pass	ine lest.					
				-	Altitude Simulati	on Test on Cl	narged Packs			
		Nie	Be	efore	Afte	er	voltage residue	mass loss		
	I	No.	OCV	Weight	OCV	Weight	Volt	Weight	other event	
		1	(V) 12.088	(g) 206.82	(V) 12.084	(g) 206.80	(%) 99.97%	(%) 0.01%	0	
		2	12.088	206.88	12.084	206.85	99.98%	0.01%	0	
		3	12.087	206.87	12.083	206.84	99.97%	0.01%	0	
		4	12.091	206.79	12.086	206.78	99.96%	0.01%	0	
		5	12.031	206.68	12.028	206.65	99.98%	0.01%	0	
		6	12.016	206.71	12.013	206.70	99.98%	0.00%	0	
		7	12.043	206.61	12.039	206.59	99.97%	0.01%	0	
		8	12.033	206.79	12.029	206.78	99.97%	0.01%	0	
					sembly ; R-Rupture Disassembly , No					
Rav	w Data									



	Corporation				Commission)							
Item	Test Item	0.1		st specificatio				udge criteria		ole(s)		
T2	Thermal test (UN38.3-2)	2-2.F	followed by some state of the maximu temperatus. Repeat 2-1 for packs at aml weight are m	ored for 6 houstorage for 6 hm time intervale re extremes is or 10 times. The pient for 24 houseasured. The neasured and	nours at -40g al between to a 30 minutes then store the burs. All pac charged ba	±2°C . n test n s. r E ne 1	no leak no disa upture	ess loss (<0.1%), sage, no venting, essembly, no e and no fire. v voltage drop <	4 packs are standard charged (Pack#1~4) 4 packs 50 cycled ending in fully charged states (Pack#5~8)			
Test Per	iod	Star	t: 2017/06	/08	End:20	17/06	6/14					
Test Equ	uipment	數位	 z電表 Q15					Q336				
Major Pr		-	<u> </u>		<u>, </u>		. • •	-				
Warning		_										
	nendation	The	nacks na	ass the tes	<u> </u>							
IV e collili	lenuation	1110	, paoko pe	200 110 100								
							on Cha	arged Packs				
		No.	Be	efore		fter		voltage residue	mass loss	other event		
		NO.	OCV	Weight	OCV	Weig	- 1	Volt	Weight	Other event		
		1	(V) 12.084	(g) 206.80	(V) 12.015	(g 206.		(%) 99.43%	0.00%	0		
		2	12.087	206.85	12.011	206.		99.37%	0.01%	0		
		3	12.083	206.84	12.008	206.	81	99.38%	0.01%	0		
		4	12.086	206.78	12.012	206.	76	99.39%	0.01%	0		
		5	12.028	206.65	11.957	206.	63	99.41%	0.01%	0		
		6	12.013	206.70	11.938	206.		99.38%	0.01%	0		
		7	12.039	206.59	11.971	206.:		99.44%	0.00%	0		
		8	12.029	206.78	11.954	206.		99.38%	0.01%	0		
				enting ; D-Disass No Venting , No [Fire				
Rav	w Data											



- 37	corporation											
Item	Test Item			Test spe				Judge crit	eria	Sa	ample(s)	
Т3	Vibration test (UN38.3-3)	3-2. 3-3. A	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. 3-2. The logarithmic frequency sweep is as follows: 7-18 Hz → 1gn 18-50 Hz → 0.8mm amplitude 50-200 Hz → 8gn 3-3. All packs weight are measured. The charged packs voltage are measured and recorded.								50 cycled n fully states	
Test Per	iod	Sta	art: 2017/0	6/15	End:2	017/06/16	6			•		
Test Equ	ipment	數位	z電表 Q15	3, 電子天	平 Q090,	振動測試	i機 Q	300				
Major Pr	oblem	-										
Warning		-										
	nendation	The	packs p	ass the te	st.							
						tion Test on						
		No.		fore			volt	age residue	mass loss Weight		other event	
			OCV (V)	Weight (g)	OCV (V)	Weight (g)		Volt (%)		eignt (%)		
		1	12.015	206.80	12.011	206.78		99.97%		01%	0	
		2	12.011	206.82	12.004	206.81		99.94%		.01%	О	
		3	12.008 12.012	206.81 206.76	12.001 12.006	206.80		99.94%		.01%	0	
		5	11.957	206.76	11.949	206.74 206.60		99.95% 99.93%		.01%	0	
		6	11.938	206.67	11.932	206.65		99.95%		.01%	0	
		7	11.971	206.58	11.962	206.55		99.92%	0.	.01%	0	
		8	11.954	206.76	11.947	206.75		99.94%	0.	.00%	0	
			_	/enting ; D-Disas	-							
Rav	v Data		O-No Leakage	, No Venting , No	o Disassembly	, No Rupture ,	No Fire					



			Test specification Judge criteria Sample(s)									
Item	Test Item	4.4		-		1 .	Judge criteria No mass loss (<0.1%),					
Т4	Shock test (UN38.3-4)	4-2. 4-2. ((t t t 4-3. /	by means of all mounting Packs shall be of peak acce of 6 millisect to 3 shocks in three shocks mutually periche pack for all batteries	a rigid moun surfaces. De subjected leration 150g ands. Each part the positive in the negat pendicularly a total of 18 sweight are m	to the testing mat, which will sure to a half-sine and pulse dack shall be sure direction followive direction or mounting positishocks. easured. The measured and	pport shock uration bjected wed by f three	no leakage, no venting, no disassembly, no rupture and no fire. Battery voltage drop < to the column of the column					
Test Per	iod	Star	t: 2017/06	/19	End:201	7/06/1	9	•				
Test Equ	ipment	數位	電表 Q15	3, 電子天-	平 Q090, 衝	擊測試	₹ Q154					
Major Pr	oblem	-										
Warning	Point	-										
Recomn	nendation	The	packs pa	ass the te	st.							
					Shock T	est on C	harned Packs					
		Shock Test on Charged Packs Before After voltage res						mass loss				
		No.	OCV	Weight	OCV	Wei	_	Weight	other event			
			(V)	(g)	(V)	(g	ŭ	(%)				
		1	12.011	206.78	12.006	206.		0.00%	0			
		2	12.004	206.81	12.000	206.		0.01%	0			
		3	12.001	206.80	11.996	206.		0.01%	0			
		5	12.006 11.949	206.74	12.003 11.945	206. 206.		0.01%	0			
		6	11.932	206.65	11.943	206.		0.01%	0			
		7	11.962	206.55	11.960	206.		0.01%	0			
		8	11.947	206.75	11.942	206.	.73 99.96%	0.01%	0			
		Note:	L-Leakage ; V-V	enting ; D-Disas	sembly ; R-Rupture	; F-Fire						
			O-No Leakage ,	No Venting , No	Disassembly , No	Rupture,	No Fire					
Rav	w Data											





Short Circuit Test (UN38.3-5) Test Period Start: 2017/06/20 Test Equipment Recommendation Raw Data Short Circuit Test (UN38 Sexterior) Sexterior packs exterior reach 55±2°C, they are shorted by connecting terminals with a copper wire of resistance less than 100m Ohm. Sexterior packs exterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire of resistance less than 100m Ohm. Sexterior peak terminals with a copper wire for existance less than 100m Ohm. Sexterior peak terminals with a copper wire for existance less than 100m Ohm. Sexterior peak terminals with a copper wire for existance less than 100m Ohm. Sexterior peak terminals with a copper wire for existance less than 100m Ohm. Sexterior peak terminals we terrior peak terminals we terrior peak terminals we terrior peak	ltom	Toot Itom		Test specification Judge criteria Sample(s)								
Short Circuit Test (UN38.3-5)	Item	Test Item	E 1 Do	•		n and						
Short Circuit Test (UN38.3-5) Test Period Start: 2017/06/20 End:2017/06/23 Test Equipment 数位电表 Q153, 資料收集器 Q075, 烘箱 Q171 Recommendation The packs pass the test. Short Circuit Test on Charged Packs No. Max Temp.(***) Other event 1 5:50:71 O								-	'			
Short Circuit Test (UN38.3-5) 5-4. The short was continued for more than 1 hour or the cell temperature return to 55°. The packs are observed for a further 6 hours. Test Period Start: 2017/06/20 End:2017/06/23 Test Equipment Recommendation The packs pass the test. Short Circuit Test on Charged Packs No. Max. Temp.(°C) Other event 1 55°.43 O			· · · · · · · · · · · · · · · · · · ·						no l			
wire of resistance less than 100m Ohm. 5-4. The short was continued for more than 1hour or the cell temperature return to 55℃. The packs are observed for a further 6 hours. Test Period Start: 2017/06/20 End:2017/06/23 Test Equipment & 位 & Q 153, 資料收集器 Q075, 烘箱 Q171 Recommendation The packs pass the test. Short Circuit Test on Charged Packs No. Max Temp.(**) Other event 1 55.43 O 2 55.76 O 3 54.39 O 4 54.28 O Note: D-Disassembly; R-Rupture; F-Fire O- No Disassembly; R-Rupture; F-Fire				•		•	-		4 P	•		
Test Period Start: 2017/06/20 End: 2017/06/23 Test Equipment Recommendation The packs pass the test. Short Circuit Test on Charged Packs No. Max. Temp.(**O) Other event 1 554.3 O 2 55.76 O 3 54.39 O 4 54.28 O Note: D-Disassembly; R-Rupture; F-Fire O-No Disassembly; No Rupture, No Fire Item Test Item Test specification Test specification Test Period Start: 2017/06/08 Test Equipment Start: 2017/06/08 Test Equipment Raw Data Test Period Start: 2017/06/08 Raw Data The Cells asses the test. Crush test/ Impact test UN38.3-6) Test Period Start: 2017/06/08 Test Equipment Recommendation The Cells pass the test. Crush Test on 50% Charged Cells No. Max. Temp.(**C) Other event 1 21.46 O 2 20.68 O 3 20.49 O Other event 1 21.46 O 0 2 2 20.68 O 0 3 3 20.49 O Other event 1 21.46 O 0 2 2 20.68 O 0 3 3 20.49 O Other event 1 21.46 O 0 2 2 20.68 O 0 3 3 20.49 O Other event	T5			•			exter	ior peak		· ·		
Packs are observed for a further 6 hours.		(UN38.3-5)		in the elient has commissed for more than those positions of the elient								
Test Period Start: 2017/06/20 End: 2017/06/23 Test Equipment 教 企意表 Q153,資料收集署 Q075,崇箱 Q171 Recommendation The packs pass the test. Short Circuit Test on Charged Packs No. Max. Temp(**C) Other event 1				•								
Test Equipment Recommendation Recommendation			pa	cks are observed for	a further 6 h	ours.						
Test Equipment Recommendation Recommendation												
Recommendation The packs pass the test. Short Circuit Test on Charged Packs No Max. Temp(°C) Other event 1 55.43 O 2 55.76 O 3 54.39 O 4 54.28 O 5 55.71 O 6 655.71 O 6 655.71 O 0 6 655.71 O 0 6 65.71 O 0 8 54.82 O Note: D-Disassembly; R-Rupture; F-Fire O- No Disassembly; No Rupture, No Fire	Test Per	iod										
Raw Data Short Circuit Test on Charged Packs No. Max. Temp.(℃) Other event 1 55.43 O 2 55.76 O O 3 54.39 O 4 54.28 O 5 55.17 O O 7 55.93 O 8 54.82 O Note: D-Disassembly; R-Rupture; F-Fire O- No Disassembly; R-Rupture; P-Fire O- No Disassembly; R-Rupture; No Fire	Test Equ	ıipment	數位電	意表 Q153, 資料↓	文集器 Q07	5, 烘箱 🤇	Q171					
Raw Data	Recomm	nendation	The p	acks pass the t	est.							
Raw Data			S	hort Circuit Test on	Charged Pack	s						
Raw Data			No.	Max. Temp.(°C)	Other ev	ent						
Raw Data			1	55.43	0							
Raw Data			2	55.76	0							
Section Start: 2017/06/08 Start: 2017/06/08 Start: 2017/06/09 Test Equipment Start: 2017/06/08 Start: 2017/06/08 Start: 2017/06/08 Start: 2017/06/08 Start: 2017/06/08 Crush Test on 50% Charged Cells No. Max. Temp.(°C) Other event Crush Test on 50% Charged Cells Crush Test on 50% C			3	54.39	0							
Section Se	Pay	w Data										
Test Period Start: 2017/06/08 End: 2017/06/09 Start: 2017/06/08 End: 2017/06/09 Start: 2017/06/08 End: 2017/06/09 Start: 2018/05/2 Start: 2018/06/2 Start: 2018/06	INA	w Dala										
Recommendation Start: 2017/06/08 Start: 2017/06/08 End: 2017/06/09 Test Equipment Start: 2017/06/08 Start: 2017/06/08 Crush Test Commendation Crush Test Co												
Item Test Item Test specification Judge criteria Sample(Crush test (A 9.1 Kg mass is to be dropped from a height of 11±2.5cm onto the sample.) 6-2.Cell's diameter < 20mm, Execution impact test. (UN38.3-6) 6-2.Cell's diameter < 20mm, Execution crush test (The cells are crushed with a 13 KN with the crush tester. Once the force is obtained it is to be released.) Test Period Start: 2017/06/08 End: 2017/06/09 End: 2017/06/09 Est Equipment \$\frac{\text{Start: 2017/06/08}}{\text{Deals are Substanted it is to be released.}} The Cells pass the test. Crush Test on 50% Charged Cells No.												
Test Item Test Item Test specification Judge criteria Sample(External temperature of cell does not exceed 170°C and there is no disassembly and no fire within 6 hours of the test. (A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.) G-2.Cell's diameter < 20mm, Execution crush test (The cells are crushed with a 13 KN with the crush tester. Once the force is obtained it is to be released.) Test Period Start: 2017/06/08 End: 2017/06/09 Test Equipment 数位電表 Q153, 資料收集器 Q152, 擠壓試驗機 Q437/撞擊測試機 Q231 Recommendation The Cells pass the test. O			0	34.62	U							
Test Item			Note: D	-Disassembly ; R-Ruptu	re ; F-Fire							
Crush test/ Impact test (UN38.3-6) Test Period Start: 2017/06/08 Raw Data 6-1.Cell's diameter > 20mm, Execution impact test. (A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.) 6-2.Cell's diameter < 20mm, Execution crush test (The cells are crushed with a 13 KN with the crush tester. Once the force is obtained it is to be released.) External temperature of cell does not exceed 170°C and there is no disassemb ly and no fire within 6 hours of the test. External temperature of cell does not exceed 170°C and there is no disassemb ly and no fire within 6 hours of the test. External temperature of cell does not exceed 170°C and there is no disassemb ly and no fire within 6 hours of the test. External temperature of cell does not exceed 170°C and there is no disassemb ly and no fire within 6 hours of the test. External temperature of cell does not exceed 170°C and there is no disassemb ly and no fire within 6 hours of the test. External temperature of cell does not exceed 170°C and there is no disassemb ly and no fire within 6 hours of the test. External temperature of cell does not exceed 170°C and there is no disassemb ly and no fire within 6 hours of the test. External temperature of cell does not exceed 170°C and there is no disassemb ly and no fire within 6 hours of the test. External temperature of cell does not exceed 170°C and there is no disassemb ly and no fire within 6 hours of the test. External temperature of cell does not exceed 170°C and there is no disassemb ly and no fire within 6 hours of the test.			C)- No Disassembly , No	Rupture , No Fi	re						
Crush test/ Impact test (A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.) Test Period Test Equipment Recommendation Raw Data 6-1.Cell's diameter > 20mm, Execution impact test. (A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.) 6-2.Cell's diameter < 20mm, Execution crush test (The cells are crushed with a 13 KN with the crush tester. Once the force is obtained it is to be released.) Test Period Start: 2017/06/08 End: 2017/06/09 Test Equipment Start: 2017/06/08 End: 2017/06/09 The Cells pass the test. Crush Test on 50% Charged Cells No.	Item	Test Item		Test spe	ecification		_			Sample(s)		
Crush test/ Impact test (UN38.3-6) Test Period Test Equipment Recommendation Raw Data (A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.) (A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.) (A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.) (A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.) (A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.) (A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.) (Cell #1~5) (Cell #1~5) (Cell #1~5) Test Period Start: 2017/06/08 End: 2017/06/09 Test Equipment Provided To C and there is no disassembly and no fire within 6 hours of the test. (Cell #1~5) (Cell #1~5) (Cell #1~5) (Cell #1~5)			6-1.Ce	ll's diameter > 20mm	n, Execution in	mpact test.			-			
Test Period Start: 2017/06/08 End: 2017/06/09 Test Equipment 數位電表 Q153, 資料收集器 Q152, 擠壓試驗機 Q437/撞擊測試機 Q231 Recommendation The Cells pass the test. Crush Test on 50% Charged Cells No. Max. Temp.(°C) Other event 1 21.46 O 2 20.68 O Raw Data Recommendation Gire within 6 hours of the test.			·					170°C and there is no				
UN38.3-6) 6-2.Cell's diameter < 20mm, Execution crush test (The cells are crushed with a 13 KN with the crush tester. Once the force is obtained it is to be released.) Test Period Start: 2017/06/08 End: 2017/06/09 Test Equipment 數位電表 Q153,資料收集器 Q152,擠壓試驗機 Q437/撞擊測試機 Q231 Recommendation The Cells pass the test. Crush Test on 50% Charged Cells No. Max. Temp.(℃) Other event 1 21.46 O 2 20.68 O Raw Data Raw Data			61±2.5	cm onto the sample.)			I((:A #1~5)				
(The cells are crushed with a 13 KN with the crush tester. Once the force is obtained it is to be released.) Test Period Start: 2017/06/08 End: 2017/06/09 Test Equipment 數位電表 Q153,資料收集器 Q152,擠壓試驗機 Q437/撞擊測試機 Q231 Recommendation The Cells pass the test. Crush Test on 50% Charged Cells No. Max. Temp.(℃) Other event 1 21.46 O 2 20.68 O Raw Data Rew Data	Т6	-	6 2 00	ll'a diamatar . 20mm	. Evecution a	wuch toot	١	within 6 hou	rs of the			
Test Period Start: 2017/06/08 End: 2017/06/09 Test Equipment 數位電表 Q153, 資料收集器 Q152, 擠壓試驗機 Q437/撞擊測試機 Q231 Recommendation The Cells pass the test. Crush Test on 50% Charged Cells No.		(UN36.3-6)				t	est.					
Test Equipment 數位電表 Q153,資料收集器 Q152,擠壓試驗機 Q437/撞擊測試機 Q231 Recommendation The Cells pass the test. Crush Test on 50% Charged Cells No. Max. Temp.(℃) Other event 1 21.46 O 2 20.68 O 3 20.49 O 4 20.39 O			,			ed.)						
Test Equipment 數位電表 Q153,資料收集器 Q152,擠壓試驗機 Q437/撞擊測試機 Q231 Recommendation The Cells pass the test. Crush Test on 50% Charged Cells	Test Per	iod	Start:	2017/06/08	End: 20	017/06/09	 9					
Crush Test on 50% Charged Cells No. Max. Temp.(°C) Other event 1 21.46 O 2 20.68 O 3 20.49 O 4 20.39 O	Test Equ	ipment						& Q437/撞	擊測試	機 Q231		
No. Max. Temp.(°C) Other event 1 21.46 O 2 20.68 O 3 20.49 O 4 20.39 O	Recomm	nendation	The C	Cells pass the te	est.							
1 21.46 O 2 20.68 O 3 20.49 O 4 20.39 O				Crush Test	on 50% C	harged C	ells					
Raw Data 20.68 O O O O O O O O O O O O O O O O O O O			No.	Max. Temp	o.(°C)	Oth	ner e	vent				
Raw Data 3 20.49 O O			1	21.46			0					
4 20.39 O							0					
	Rav	w Data										
5 21.76 O				20.39			0					
			5	21.76			0					
Note: D-Disassembly ; F-Fire / O-No Disassembly , No Fire			Note:	D-Disassembly ; F	-Fire / O-N	o Disasse	mbly	, No Fire				
				-								
Raw Data 3 20.49 O O			1	21.46	Oth	0						
4 20.39 O	Dec	Raw Data										
	Rav			20.49			0					
5 21.76 O			4	20.39			0					
21.70												
			5	21.76			U					



Literat	Corporation		Report No.: Of R-QA-Lab-010001 AOR 17002										
Item	Test Item		Те	st specification		Judge criteria	Sample(s)						
Т7	Overcharge test (UN38.3-7)	recommended maximum continuous charge current. 7-2. The minimum voltage of the test shall be as follows: (a) When the Spec's recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V. (b) When the Spec's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage. 7-3. Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours. Start: 2017/06/19 End: 2017/06/23											
Test Per	iod				7/06/23	<u> </u>							
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	oblem	-											
Warning	Point	-											
Recomn	nendation	The p	acks pass the	e test.									
		No. Charge Charge Max. Temp.(°C) Other event											
		No.	Voltage(V)	Current(A)	Max. Temp.(°								
		9			20.13.		0						
		10		5.4	20.46 21.59		0						
		12	2		20.74		0						
		13 22.0 V	5.4	20.59	(0							
		14			21.43 20.68		0						
		15					0						
		16			0								
Rav	w Data	Note:	D-Disassemb	ly;F-Fire / O-	No Disassembly	No Fire, y							



Item	Test Item			Test specification			Judge criteria	Sample(s)
Т8	Forced discharge test (UN38.3-8)	conne initial	ecting it in series	scharged at ambient tem with a 12 V D.C. power the maximum discharge ufacturer.	supply	re by at an	o disassembly, o fire within even days after e test.	10 cells are first cycle in fully discharged states (Pack#6~15) 10 cells are after 50 cycles ending in fully discharged states (Pack #16~25)
Test Per	iod	Start	: 2017/06/15	End:2017/06/1	6	'		,
Test Equ	ipment	數位	電表 Q153,	資料收集器 Q160,	電源	供應器 Q1	47/Q236/Q23	37
Major Pr	oblem	-						
Warning		_						
	nendation	The	packs pass	the test				
		Ford	ed discharge are fi	rst cycle in fully discharged	Forced	d discharge are	after 50 cycles end	ling in fully discharged
		No.	Max. Temp.(°C)	Other event	No.	Max. Temp.		Other event
		6	31.26	0	16	33.16		0
		7	35.49	0	17	30.49		0
		8	39.26 34.75	0	18 19	32.75 30.65		0
		10	35.16	0	20	35.61		0
		11	34.86	0	21	32.46		0
		12	35.61	0	22	35.12		0
		13	34.78	0	23	34.26		0
		14 15	37.16 35.68	0	24 25	33.79 34.76		0
				re / O-No Disassembly , No Fi		34.70		O
Ra	w Data			2. 2. No Significantly ; (NOT)				