

Control NO: LE-CU-15-01-041

UN38.3 Test Report

Recommendations on the TRANSPORT OF **DANGEROUS GOODS**

(Manual of Tests and Criteria, Fifth revised edition, Amend 1)

Customer: Lenovo Model: L14M2P23 Rating: 7.4V, 30Wh, 4050mAh Test duration: 2014/12/29~2015/01/23

Approved By	Checked By	Prepared By
Winel that	Winel that	Happy-6n.

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This test report is valid only to the items, Invalid for separation using.



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1. Purpose of the Test:

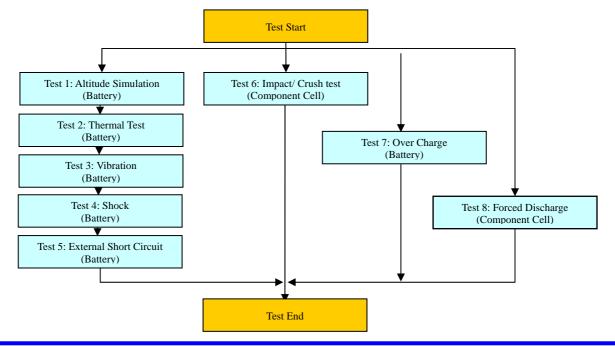
To test each cell/battery is of the type proved to meet the requirements in the Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, Fifth revised edition, Amend 1.

2. Test Quantity:

- 2.1 Four batteries, at first cycle, in fully charged states. (T.1~T.5 test only)
- 2.2 Four batteries, after fifty cycles ending in fully charged states. (T.1~T.5 test only)
- 2.3 Five component cells, at first cycle at 50% of the design rated capacity. (T.6 test only)
- 2.4 Four batteries, at first cycle, in fully charged states. (T.7 test only)
- 2.5 Four batteries, after fifty cycles ending in fully charged states. (T.7 test only)
- 2.6 Ten component cells, at first cycle in fully discharge states. (T.8 test only)
- 2.7 Ten component cells, after fifty cycles ending in fully discharged states. (T.8 test only)

3. Test procedure:

- 3.1 All detail related test procedure shall be follow Standard Operation Procedure of SMP subjected CW01-5916 Rev.4 issue documentation.
- 3.2 Test flow shall be follow below statement.



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4. Test Result:

4.1 T.1 ~T.4 Test result: **Passed**

- 4.1.1 All batteries could meet the requirement, mass loss was less than 0.1% and residual OCV not less than 90% after the test.
- 4.1.2 No leakage, no venting, no disassembly, no rupture and no fire.

4.2 T.5 Test result: Passed

- 4.2.1 All batteries could meet the requirement, external temperature did not exceed 170
- 4.2.2 All batteries were no disassembly, no rupture and no fire during the test and within six hours after the test.

4.3 T.6 Test result: Passed

- 4.3.1 All component cells could meet the requirement, external temperature did not exceed 170 .
- 4.3.2 All component cells were no disassembly and no fire during the test and within six hours after the test.

4.4 T.7 Test result: Passed

4.4.1 All batteries could meet no disassembly and no fire during the test and within seven days after the test.

4.5 T.8 Test result: Passed

4.5.1 All component cells could meet the requirement, no disassembly and no fire during the test and within seven days after the test.

Conclusion: The samples had passed the test items of UN38.3.

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5. Test Equipment:

dn	SIMIC2 AT		hu, Jingsu Province.(China		Revised date: Model name:	2014/12/30 Date 2014/12/29 L14M2P23	~2015/01/23	Page:1
<u>.</u>	0312-32302233	FAA: 0312-3230	2211	Tect in	struments Reference List	would name.	L1402F23		
-	Instrument	Instrument						Calibration	
æd	ID(New)	ID[Old]	Instrument Name	Туре	Range Used	Manufacturer	CalibrationDate_Last	Date Next	Remarks
v	Pretest EE01-CA-100002	C602M00/S0096	715 learning 酸	新普科技	18V/8A	新普科技	2014/12/80	2015/12/29	
v		C602M00/S0107	720 learning 楼	新普科技	Chang:18V/17A Dischange:16V/18A	新普科技	2014/3/10	2015/8 <i>1</i> 9	
	EE01-CA-100003	C602M00/S0099	715 learning 機	新普科技	18V/8A	新普科技	2014/03/10	2015/03/09	
	EE01-CA-100005	C602M00/S0098	715 leaming 機	新普科技	18V/8A	新普科技	2014/04/09	2015/04/08	
	EE03-CA-100020	C602M00/S0163	720 leaming 檓	新普科技	Chang:18V/17A Dischange:16V/18A	新普科技	2014/10/21	2015/10/20	
	Low Pressure Te	st							
V	EC15-CA-E00003		Altitude	SVT-110	Кра: 0 ~~ 99Кра	HSIN JANG	2014/09/08	2015/09/07	
V	EA02-CA-100002	C602M0040293	mQ Hitester	3561	R:10~310mQ_V:20~20V	нюкі	2014/9/17	2015/9/16	
V	EF03-CA-I00001	C602M00/C0604	Electronic Balance	XS1220M-SCS	1220g±0.001g	CHENGZHUN	2014/10/21	2015/10/20	
v	ED01-CA-100007	C602M00/T0412	Thermo Meter	TA218	T: 10 て~70 て RH: 25% ~~98%	ктј	2014/8/27	2015/8/26	
	Thermal Test								
V	EC29-CA-E00002		Thermal Shock	TSK-A4C-150	T:65 C to 150 C	KSON	2014/06/09	2015/06/08	
V V	EA02-CA-100002	C602M0040293	mQ Hitester Electronic Balance	3561 XS1220M-SCS	R:-10~310mΩ_V:-20~20V 1220g±0.001g	HIOKI CHENGZHUN	2014/9/17 2014/10/21	2015/9/16 2015/10/20	
v	ED01-CA-100007	C602M00/T0412	Thermo Meter	TA218	T:-10°C~70°C RH:25%~98%	KTJ	2014/10/21	2015/8/26	
_									
	Vibration Test								
V	EC08-CA-E00001	C602M00/0197	Vibration	EM-200F2K-25N	F 3~2000Hz G:0 2~55G	King Design	2014/3/12	2015/8711	
	EC08-CA-E00002 EA02-CA-100002		Vibration mQ Hitester	EM-200F2K-25N 3561	F3~2000Hz G:02~55G R:10~310mΩ V:20~20V	King Design HIOKI	2014/9/24	2015/8/23	
V V	EF03-CA-100002	C602M00/0293 C602M00/C0604	m⊔ Hitester Electronic Balance	3561 XS1220M-SCS	1220g±0.001g	CHENGZHUN	2014/9/17 2014/10/21	2015/8/16 2015/10/20	
	ShockTest								<u> </u>
V	EC17-CA-E00001		Shock	HS 15,45	G:10~2000G	Lansmont	2014/09/08	2015/09/07	
V	EA02-CA-100002		mΩ Hitester	3561	R:-10~310mQ_V:-20~20V	HIOKI	2014/9/17	2015/9/16	
V	EF03-CA-100001	C602M00/C0604	Electronic Balance	XS1220M-SCS	1220g±0.001g	CHENGZHUN	2014/10/21	2015/10/20	
	External Short C	incuit Test							
V	EA02-CA-100002	C602M0040293	mû Hitester	3561	R:10~310mQ_V:20~20V	нюкі	2014/9/17	2015/9/16	
v	EA09-CA-100004	C602M00/0207	Data logger	34970A	V:0~ 300V, T:-150°C~1200°C	Agilent	2014/09/17	2015/09/16	
V	EC26-CA-I00023	C602M00/0518	chamber	WIT TH-2P-E	-40 C to 150 C	WIT	2014/08/11	2015/08/10	
v	ED01-CA-100007	C602M00/T0412	Thermo Meter	TA218	T:10 て~70 て RH:25% ~98%	ктј	2014/8/27	2015/8/26	
	Impa ct Test/Curs	h Test							
	EC17-CA-I00001		Impact test	100-372	H 60~80cm	JYI SHENG	2014/9/17	2015/9/16	
v	EC23-CA-E00001		Qursh Test	BE-6047	1.0KN~15.0KN	BELL	2014/09/08	2015/09/07	
v	EA09-CA-100005	C602M00/0745	Data logger	34970A	V: 0~ 300V, T: -150°C~1200°C	Agilent	2014/09/17	2015/09/16	
v	ED01-CA-100010	C602M00/T0581	Thermo Meter	TA218	T:-10°C~70°C RH:25%~98%	ктј	2014/6/22	2015/6/21	
	Owesham Tar								
v	Overcharge Test EA06-CA-E00003		Downer Summer	DS6024	0~60V 0~24A	MOTECH	2014/03/12	2015/03/11	
V	EA06-CA-E00003 EA06-CA-E00002		Power Supply Power Supply	DS6024 DS6024	0~60V 0~24A 0~60V 0~24A	MOTECH	2014/03/12	2015/03/11	
ÿ	EA06-CA-E00002		Power Supply	DS6024 DS6024	0~60V 0~24A	MOTECH	2014/03/12	2015/03/11	
÷	EA06-CA-E00004		Power Supply	DS6024	0~60V 0~24A	MOTECH	2014/03/12	2015/03/11	
v		C602M00/T0412	Thermo Meter	TA218	T : -10°C ~70°C RH : 25%~98%	KTJ	2014/8/27	2015/8/26	
		L					ļ		
	Froced Discharg								
¥	EA06-CA-100004	(Power Supply	E3633A	0~8V,20A/0~20V,10A	AGILENT	2014/9/17	2015/9/16	
<u>v</u>	EA06-CA-100016	/	Power Supply	E3633A	0~8V,20A/0~20V,10A	AGILENT	2014/5/10	2015/5/8	
<u>v</u>	EA06-CA-100015	C602M00/P0481	Power Supply	E3633A	0~8V,20A/0~20V,10A	AGILENT	2014/5/10	2015/5/8	
<u>v</u>	EA05-CA-100006	Ľ	Electronic LOAD	3311D	60V/60A, 300W	PRODIGIT	2014/0512	2015/05/11	
<u>v</u>	EA05-CA-100009	/	Electronic LOAD	3311F	60V/60A, 300W	PRODIGIT	2014/0512	2015/05/11	
v.	EA05-CA-100008	p56020000AL0402	Electronic LOAD	3311F	60V/60A, 300W	PRODIGIT	2014/08/13	2015/08/12	1

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Control NO: LE-CU-15-01-041

6. T.1~T8 detail reports:

Model Name: L14M2P23

Control No.:LE-CU-15-01-041

Customer: Lenovo

UN 38.3 Test Datasheet

Test Duration:2014/12/29~2015/01/23

Reviewer:Wind_Zhao

Test Sample Identification:

			Battery				Cor	mponent Cell
Used	Sample No.	Sample State	Used	Sample No.	Sample State	Used	Sample No.	Sample State
۷	1~4	1 Cycle, Fully charged	۷	5~8	50 Cycle, Fully charged	٧	1C~5C	1 Cycle, 50% charged
۷	9~12	1 Cycle, Fully charged	٧	13~16	50 Cycle, Fully charged	٧	6C~15C	1 Cycle, 0% charged
		25Cycle, Fully charged			25 Cycle , Fully charged	۷	16C~25C	50 Cycle, 0% charged

T.1 Altitud	e Simulation		Start time:2015/01 Finsh time:2015/01			Ambieri	t temp.: 22.7	t	Operator:	Happy_G	iu
		Sample	No.: 01					Sample	:No.: 02		
	Before	After	Variation	۱	Results		Before	After	Variation		Results
Mass(g)	143.5	143.5	Massioss %	0.01%	р	Mass (g)	143.1	143.0	Massloss %	0.01%	Р
0CV (V)	8.30	8.28	Residual OCV %	99.75%	r	0CV(V)	8.31	828	Residual OCV %	99.71%	r
		Sample	No.: 03					Sample	No.: 04		
	Before	After	Variation	۱	Results		Before	After	Variation		Results
Mass(g)	143.6	143.6	Massioss %	0.01%	P	Mass (g)	142.5	142.5	Massloss %	0.01%	Р
0CV (V)	8.31	8.29	Residual OCV %	99.71%	F	0CV(V)	829	827	Residual OCV %	99.71%	F
		Sample	No.: 05					Sample	No.: 06		
	Before	After	Variation	۱ I	Results		Before	After	Variation		Results
Mass(g)	143.0	143.0	Massioss %	0.01%	P	Mass (g)	143.0	143.0	Massloss %	0.01%	Р
0007(V)	8.31	8.28	Residual OCV %	99.69%	r	0CV(V)	829	827	Residual OCV %	99.71%	r
		Sample	No.: 07					Sample	:No.: 08		
	Before	After	Variation	۱	Results		Before	After	Variation		Results
Mass(g)	142.6	142.6	Massioss%	0.01%	P	Mass (g)	142.9	142.9	Massloss %	0.01%	Р
0CV (V)	8.30	8.28	Residual OCV %	99.74%	r	0CV(V)	8.30	828	Residual OCV %	99.70%	r

T.2 Them	ial Test		Start time:2015/01 Finsh time:2015/0			Ambier	ttemp.: 19.5	Ċ	Operator: Happy_(iu
		Sample	No.: 01					Sample	e No.: 02	
	Before	After	Variation	١	Results		Before	After	Variation	Results
Mass(g)	143.5	143.5	Massioss%	0.01%	р	Mass (g)	143.0	143.0	Massloss % 0.01%	Р
000101	8.28	8.16	Residual OCV %	98.53%	F	000(0)	828	8.16	Residual OCV % 98.56%	г
		Sample	No.: 03					Sample	≥No.: 04	
	Before	After	Variation	۱	Results		Before	After	Variation	Results
Mass(g)	143.6	143.6	Massioss %	0.01%	P	Mass (g)	142.5	142.5	Massloss % 0.01%	Р
0CV (V)	8.29	8.17	Residual OCV %	98.59%	r	0CV(V)	827	8.14	Residual OCV % 98.50%	F
		Sample	No.: 05					Sample	≥No.: 06	
	Before	After	Variation	۱	Results		Before	After	Variation	Results
Mass(g)	143.0	142.9	Massloss%	0.01%	P	Mass (g)	143.0	143.0	Massloss % 0.01%	Р
0CV (V)	8.28	8.16	Residual OCV %	98.54%	F	0CV(V)	827	8.15	Residual OCV % 98.57%	г
		Sample	No.: 07					Sample	≥No.: 08	
	Before	After	Variation	۱	Results		Before	After	Variation	Results
Mass(g)	142.6	142.6	Massloss%	0.01%	P	Mass (g)	142.9	142.9	Massloss % 0.01%	Р
0CV (V)	8.28	8.16	Residual OCV %	98.51%	r	0CV(V)	828	8.15	Residual OCV % 98.50%	

T.3 Mbrati	on		Start time:2015/01 Finsh time:2015/0			Ambien	t temp.: 20.7	°C	Operator:	Happy_G	u
		Sample	No.: 01					Sample	:No.: 02		
	Before	After	Variation	٦	Results		Before	After	Variation		Results
Mass(g)	143.5	143.5	Massloss %	0.01%	р	Mass (g)	143.0	143.0	Massloss %	0.01%	P
0CV (V)	8.16	8.04	Residual OCV %	98.47%	F	0CV(V)	8.16	8.0.4	Residual OCV %	98.51%	F
		Sample	No.: 03					Sample	No.: 04		
	Before	After	Variation	٦ I	Results		Before	After	Variation		Results
Mass(g)	143.6	143.6	Massloss%	0.01%	р	Mass (g)	142.5	142.5	Massloss %	0.01%	Р
000/(V)	8.17	8.05	Residual OCV %	98.53%	F	0CV(V)	8.14	8.02	Residual OCV %	98.48%	F
		Sample	No.: 05					Sample	:No.: 06		
	Before	After	Variation	٦	Results		Before	After	Variation		Results
Mass(g)	142.9	142.9	Massloss%	0.01%	р	Mass (g)	143.0	143.0	Massloss %	0.01%	Р
000/01	8.16	8.04	Residual OCV %	98.48%	г	0CV(V)	8.15	8.03	Residual OCV %	98.52%	r
		Sample	No.: 07					Sample	:No.: 08		
	Before	After	Variation	٦ I	Results		Before	After	Variation		Results
Mass(g)	142.6	142.6	Massloss%	0.01%	P	Mass (g)	142.9	142.9	Massloss %	0.01%	Р
002101	8.16	8.04	Residual OCV %	98.53%	г	000101	8.15	8.03	Residual OCV %	98.48%	r

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Control NO: LE-CU-15-01-041

Sample No.: 01 Sample No.: 02 Before After Variation Results Before After Variation Results ass (g) 143.5 143.5 Mass loss % 0.01% P Mass (g) 143.0 Mass loss % 0.01% P P OCV (V) 8.04 8.02 Residual OCV % 99.75% P OCV (V) Sample No.: 04 S						/20_08:40 1/21_09:50			Ambie	nt temp.:	21.4	C			Operator	: Нарру_С	θu
Before (a) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4													Sample	No.: 02			
sz (g) (43.5) (43.5) Mass (ask 4% 0.01% p Mass (g) (43.6) Mass (ask 4%) 0.01% p CV(V) 64.4 60.7 Ferdual CVV% 9.74% CVV(V) 64.4 62.7 Residual CV% 9.74% P CVV(V) 64.4 Residual CV% 9.74% P Sample No.: 08 Mass (ask 10.0% P P CVV(V) 62.2 62.0 Mass (ask 10.0% P P P CVV(V) 62.2 62.0 Mass (ask 10.0% P	Bef	ore Af			Variation		Be	sults.		Be	fore	L 01	<u> </u>				Results
Occup Early and CVM Barge No: B Sample No::							102		Mass (n)					Mace			
Barder Sample No:: 03 Outer Sample No:: 04 Sample No:: 04 Barder Attack Mass locs M 0.014 P Nample No:: 04 P V(V) 6.05 442.5 Mass locs M 0.014 P Nample No:: 03 0.016 P V(V) 6.05 462.5 142.5 142.5 142.6 Mass locs M 0.016 P V(V) 6.05 8.02 0.016 P Nample No:: 07 P								Ρ	147								P
Before After Viriation Results Before After Viriation Results Before After Viriation Results P Before After Viriation Results P Before After Viriation Results Diff P C/V (V) 8.2 8.0 Results Off P C/V (V) 8.2 8.0 Results Off P Over (V) 8.2 8.0 Results Off Results P C/V (V) 8.2 8.0 Results Off	041411					00.1478			00111							00.1074	
sr (g) (48.6) (14.3.6) Mess (or 54.6) 0.01% P Mess (g) 14.2.3 142.2 142.3 Mess (loss (loss 3) Sample No: 50 50 50 50 50 50 50 50 60 50 60 50	Bef	ore Af	<u> </u>		Variation	1	Re	sults		Bet	fore	At	<u> </u>				Results
CV(1) 8.83 Residual DCV %[93.7% P OCV(1) 8.82 8.80 Berkdun LOV %[93.7% P Before Affer Variation Results Defore Affer Nassions 16.000 Results Defore Affer Nassions 16.000 Results Results P Defore Affer Nassions 16.000 Results Results P Defore Affer Nassions 16.000 Results Results Results Results Resul									Mass (m)					Mass			
Bellow Sample No: 03 Description Sample No: 06 Sample No: 06 Sample No: 07 Results Bellow Bellow Sample No: 07 Results No								P									P
Before After Variation Pieuda Before After Variation Pieuda CV(V) 8.04 8.01 Residual 0CV48 93.7% P Mass loss % 0.01% 93.7% P Mass loss % 0.01% 93.7% P Mass loss % 0.01% 93.7% P Sample No: 07 No	04(4) 0.4				001.18	00.1074			004(4)	Ŭ.	~ -	Ŷ				00.1174	
size (g) 142.3 142.5	D.4		<u> </u>		Verietier		De.	dt		D.d			<u> </u>	NU 06			Do es da
Count 8.04 8.01 Residual OCV Mill (97.04) P Ocv (V) 8.03 8.01 Residual OCV Mill (97.04) P Before Affler Variation Results Results Before Affler Variation Results Results Before Affler Variation Results							rie	suis						Maaa			nesaits
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Before Atter Variation Results Before Atter Variation Results 0210 162.5 142.5	.cv[v]] 8.u	04 8.			000%6	99.70%			υσνίνι	8.	U3	8				99.74%	
strig 142.5 142.6 142.6 142.6 142.3 <t< td=""><td></td><td></td><td>· · ·</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>No.: 08</td><td></td><td></td><td></td></t<>			· · ·											No.: 08			
Dividi 8.04 8.02 Residual OCV № (8971%) P Dividi 0 8.01 Residual OCV № (8771%) P 5 External Short Orout Start time-201501/24 1010 Ambient temp: 20.5 C Operator: Happ:_Du 5 External Short Orout Sample No.: 02 Sample No.: 03 Sample No.: 04 Sample No.: 06 Sample No.: 07 Sample No.: 08 Sample No.: 0							Re	sults									Results
CV(V) 8.04 8.02 Residual OCV %E 38.74% OCV(V) 8.80 8.91 Residual OCV %E 38.74% 5 Start imo-20150/02 08:30 Ambient temp: 20.8 ℃ Operator: Happy_Ou 5 Start imo-20150/02 08:30 Ambient temp: 20.8 ℃ Operator: Happy_Ou Residuar OCV %E 38.74% 55.8 57.2 56.8 56.2 56.3 56.3 56.4 Visit imore (retorn) 59.7 56.4 55.8 57.2 56.8 56.2 56.3 56.2 56.3 56.2 56.3 56.2 56.3 56.2 56.3 56.2 56.3 55.5								Р									Р
Sector Ambert Runp: 20.8 C Departor: Reprint Roce Operator: Reprint Roce Operator: Reprint Roce Operator: Reprint Roce Sample No.: 01 Sample No.: 02 Sample No.: 03 Sample No.: 04 Sample No.: 05 Sam	.CV [V] 8.0	04 8.	02 1	Residual	0CV %	99.71%			000(1)	8.	03	8	D1	Residua	al O CV %4	99.73%	
Cr00m10 after shott after shot		Sample No.: 01	F Sample N	inshtim lo.: 02	e :2015/0 Sample	1/22 08:30 No.: 03			Sample	No.: 05	Sample	No.: 06	<u> </u>		Sample	No.: 08	Ju
after short 8.01 0.00 8.02 0.00 8.01 0.00 <td></td> <td></td> <td>505</td> <td>•</td> <td></td> <td></td> <td>,</td> <td>// Z</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>/.4</td> <td></td>			505	•			,	// Z								/.4	
dring u(y) max max <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>																	
Max Temp. 54.8 55.1 55.2 54.8 54.9 55.5 55.6 55.2 Results P<		8.01 0.00	8.02	0.00	8.03	0.00	8.00	0.00	8.01	0.00	8.01	0.00	8.02	0.00	8.01	0.00	
(<170°L) 34.8 30.1 30.2 34.8 34.3 30.3 30.5 30.2 Results P	circuit(V)																
I < 1/2 / NC / D P	Max Temp.	548	55.4	1	54	5.2	5	54.9	57	19	54	5.5	55	6	55	5.2	
6 Impact - Crush (Component Cell) Start time 20150106 09:30 Ansh time 20150106 18:40 Ansh time 20150106 18:40 Ansh time 20150106 18:40 Ambiert temp:: 19.4 C Operator: Happy_Gu Inpact - Cylindrical cells greater than 20mm in diameter C Sample No:: 00C Sample No:: 10C Sample No:: 10C Sample No:: 10 Sample No:: 11 Sample No:: 12 Sample No:: 13 Sample No:: 10 Sample No:: 10 Sample No:: 10 Sample No:: 10C	(< 170 °C)	540	33.1		5.	5.2		14,0	04	+.0				8		/2	
6 Impact - Crush (Component Cell) Start time 20150106 09:30 Ansh time 20150106 18:40 Ansh time 20150106 18:40 Ansh time 20150106 18:40 Ambiert temp:: 19.4 C Operator: Happy_Gu Inpact - Cylindrical cells greater than 20mm in diameter C Sample No:: 00C Sample No:: 10C Sample No:: 10C Sample No:: 10 Sample No:: 11 Sample No:: 12 Sample No:: 13 Sample No:: 10 Sample No:: 10 Sample No:: 10 Sample No:: 10C	Results	Р	Р			Р		Р		Ρ		Р	F	>		р	
6 Impact / Chush (Component Cell) Rnsh time 201500106 19:40 Ambient temp:: 19.4 C Operator: HappGu Impact / Chush ends Sample No:: 01C Sample No:: 02C Sample No:: 03C Sample No:: 14 Sample																	
(< 170°C)		3.71			3.70			3.72			0.74						
Amber Start time: 2015.01/14 10:20 Enshtime: 2015.01/23 14:10 Ambient temp:: 18.9 C Operator: Happ CV before test(V) 8.31 8.30 8.31 8.30 8.29 8.30 8.23 8.30 Results P		26,4									3.71			3.71			
7. Oversharge Ambiert temp:: 18.3 C Operator: Happ Sample No.: 09 Sample No.: 10 Sample No.: 11 Sample No.: 12 Sample No.: 13 Sample No.: 14 Sample No.: 15 Sample No.: 15 Sample No.: 16 Sample No.: 13 Sample No.: 14 Sample No.: 15 Sample No.: 15 Sample No.: 15 Sample No.: 16 Sample No.: 17 Sample No.: 13 Sample No.: 14 Sample No.: 15 Sample No.: 16 Sample No.: 13 Sample No.: 14 Sample No.: 15 Sample No.: 16 Sample No.: 17 Sample No.: 13 Sample No.: 14 Sample No.: 15 Sample No.: 16 Sample No.: 10	Results	-			24.4			25.1									
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test(V) 8.31 8.30 8.30 8.23 8.30 8.23 8.30 8.23 8.30 Results P	.7 Overcharge			Finsh	P time:20 htime:20	015/01/23	14:10	P			24.7 P nt temp.:		-	24.5 P			
test(V) P<	-		19 Samp	Finsh	P time:20 htime:20	015/01/23	14:10	P	ło.: 12		24.7 P nt temp.:		-	24.5 P	ple No.:1		
8 Forced Discharge (Component Cell) Start time:2015/01/13 08:30 Rnsh time:2015/01/22 13:30 Ambient temp.: 20.4 °C Operator: Happ 0CV before test(V) Sample No.: 06C Sample No.: 07C Sample No.: 08C Sample No.: 09C Sample No.: 10C 0CV before test(V) 3.18 3.19 3.18 3.18 3.18 3.18 Results P P P P P P P 0CV before test(V) 3.18 3.20 3.18 3.19 3.19 3.18 3.19 0CV before test(V) 3.18 3.20 3.18 3.19 3.19 3.19 3.19 3.19 0CV before test(V) 3.18 3.20 3.18 3.19 3.18 3.20 3.19 3.19 3.19 3.18 3.20 3.19 3.19 3.19 3.19 3.19 3.19	-	Sample No.: (_	Finsh ble No.: 1	P time:20 htime:20	015/01/23 Imple No.	14:10	P Sample N		Sample	24.7 P nt temp.: No.: 13	Sampl	– le No.:14	24.5 P			ple No.:16
18 Forced Lischarge (Component Cell) Rinsh time:2015/01/22 13:30 Ambient temp:: 20.4 °C Operator: Happ Sample No.: 06C Sample No.: 07C Sample No.: 08C Sample No.: 09C Sample No.: 10C OCV before test(V) 3.18 3.19 3.18 3.18 3.18 Results P P P P P Sample No.: 11C Sample No.: 12C Sample No.: 13C Sample No.: 14C Sample No.: 15C OCV before test(V) 3.18 3.20 3.18 3.19 3.19 Results P P P P P P OCV before test(V) 3.18 3.20 3.18 3.19 3.19 Results P P P P P P 0CV before test(V) 3.20 3.19 3.18 3.20 Sample No.: 19C Sample No.: 20C 0CV before test(V) 3.20 3.19 3.18 3.20 3.19 Results P P P P P P <td>0CV before</td> <td>Sample No.: (</td> <td>_</td> <td>Finsh ble No.: 1</td> <td>P time:20 htime:20</td> <td>015/01/23 Imple No.</td> <td>14:10</td> <td>P Sample N</td> <td></td> <td>Sample</td> <td>24.7 P nt temp.: No.: 13</td> <td>Sampl</td> <td>– le No.:14</td> <td>24.5 P</td> <td></td> <td></td> <td>ple No.:16</td>	0CV before	Sample No.: (_	Finsh ble No.: 1	P time:20 htime:20	015/01/23 Imple No.	14:10	P Sample N		Sample	24.7 P nt temp.: No.: 13	Sampl	– le No.:14	24.5 P			ple No.:16
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Sample No.: 11C Sample No.: 12C Sample No.: 13C Sample No.: 14C Sample No.: 15C OCV before test(V) 3.18 3.20 3.18 3.19 3.19 Results P P P P P Sample No.: 16C Sample No.: 17C Sample No.: 18C Sample No.: 19C Sample No.: 20C OCV before test(V) 3.20 3.19 3.18 3.20 3.19 Results P P P P P OCV before test(V) 3.20 3.19 3.18 3.20 3.19 Results P P P P P P Sample No.: 21C Sample No.: 22C Sample No.: 23C Sample No.: 24C Sample No.: 25C OCV before test(V) 3.19 3.20 3.18 3.18 3.20	OCV before test(V) Results	Sample No.: (8.31 P harge (Compone	nt Cell)	Finsh ble No.: 1 8 30 P Start	P time:20 ntime:20 10 Sa time:20 ntime:20	015/01/23 mple No. 8.31 P 15/01/13 1 015/01/22	14:10 : 11 08:30 13:30	P Sample N 8.30 P)	Sample 82 F Ambie	24.7 P nt temp No.: 13 29 >	Sampl 8 : 20.4	е No.:14 3.30 Р С	24.5 P	8.29 P	5 Sam	ple No.:16 8.30 P
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	0CV before test(V) Results 0CV before test(V) Results 0CV before test(V) Results 0CV before test(V) Results	Sample No.: (8.31 P harge (Compone Sample N 3.18 Sample N 3.20 P Sample N 3.20 P	nrt Cell) p.: 06C p.: 11C p.: 16C p.: 21C	Finsh ble No.: 1 8 30 P Start	P time:20 10 Sa time:20 time:20 Sample 3 Sample 3 Sample 3 Sample	015/01/23 mple No. 8.31 P 15/01/13 15/01/22 No.: 07C .19 P No.: 12C .20 P No.: 17C .19 P No.: 17C .19 P No.: 22C	14:10 : 11 08:30 13:30 : : : : : : : : : : : : :	P Sample N 8.30 P Samp Samp) 3.18 P Ne No.: 1 3.18 P Ne No.: 1 3.18 P 3.18 P Ne No.: 2	Sample 82 F Ambie 80 80	24.7 P No.: 13 23 San San San	Sample Sample No. 3.18 P nple No. 3.19 P nple No. 320 P nple No.	e No.:14 3.30 P : 09C : 14C : 19C	24.5 P	8.29 P ample No 3.18 P ample No 3.19 P ample No 3.19 P ample No	5 Sam Opera 5.: 10C 5.: 15C 5.: 20C	ple No.:16 8.30 P

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Control NO: LE-CU-15-01-041

7. Test sample:





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