TEST REPORT

UN ST/SG/AC.10/11/Rev.7/Amend.1

RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS MANUAL OF TESTS AND CRITERIA, PART III, SECTION 38.3 LITHIUM METAL AND LITHIUM ION BATTERIES

Report Number. ..... :	21PP644-01_0
Date of issue ..... :	2022-06-08
Total number of pages	34
Tested by..... :	Christoph Kieß
(printed name and signature) ..... :	Christoph Kieß - Digitally signed | see http://ca.kiwa-deutschland.de for more details -
Approved by ..... :	Nadiya Eichberg
(printed name and signature) ..... :	
Testing Laboratory..... :	Kiwa Primara GmbH
Address ..... :	Gewerbestraße 28, 87600 Kaufbeuren; Germany
Applicant's name..... :	Akku Power GmbH Batterien
Address ..... :	Paul-Strähle-Str. 26 D-73614 Schorndorf Germany
Test specification:	
Standard..... :	UN ST/SG/AC.10/11/Rev.7/Amend.1 Recommendations on the TRANSPORT OF DANGEROUS GOODS MANUAL OF TESTS AND CRITERIA, PART III, SECTION 38.3 LITHIUM METAL AND LITHIUM ION BATTERIES
Test procedure ..... :	Transportation test
Non-standard test method……..:	N/A
Test item description ..... :	Li-Ion Rechargeable Battery
Trade Mark..... :	Akku Power GmbH Batterien
Manufacturer ..... :	Akku Power GmbH Batterien
Model/Type reference ..... :	25.2V 5.0Ah 126Wh
Date of receipt..... :	2021-11-30
Result……..:	All performed tests were successfully passed
Remark……:	The test results presented in this report relate only to the object tested and for the sample as received.

Table of Contents

HISTORY SHEET:			
DATE	PROJECT ENGINEER	WHAT WAS CHANGED WHAT WAS REQUIRED TO IMPLANT THE CHANGE (LIKE RETEST)	REPORT NUMBER WITH REVISION
2022-06-08	CHRISTOPH KIEß	INITIAL REPORT WRITTEN	0

List of Figures

1. Test Documentation

Customer:	Akku Power GmbH Batterien
Applied standard(s):	UN ST/SG/AC.10/11/ Rev.7/Amend.1 Recommendations on the TRANSPORT OF DANGEROUS GOODS Manual of Tests and Criteria, part III, section 38.3 Lithium metal and lithium ion batteries
Performed tests:	Conditioning T.1 Altitude simulation T.2 Thermal test T.3 Vibration T.4 Shock T.5 External short circuit T.7 Overcharge
Executing test laboratory:	Kiwa Primara GmbH Gewerbestraße 28, 87600 Kaufbeuren; Germany
Specimens received on:	2021-11-30
Total test duration:	2021-12-02 - 2022-01-28

2. Description of specimens

2.1 Technical data

Designation of specimens:	Li-Ion Rechargeable Battery
Manufacturer:	Akku Power GmbH Batterien
Configuration and cell type:	7S2P INR-18650-P26A
Nominal capacity:	5.0 Ah
Nominal voltage:	25.2 V
Discharge end voltage:	21 V
Dimensions:	135.5mm x 68mm x 43mm
Weight:	730g
Software status (if committed):	robot7N_160422.HEX
Hardware status (if committed):	N809.07PD1-04

2.2 Pictures of delivery state

Figure 1: Delivery state – side view

Figure 2: Delivery state – top view

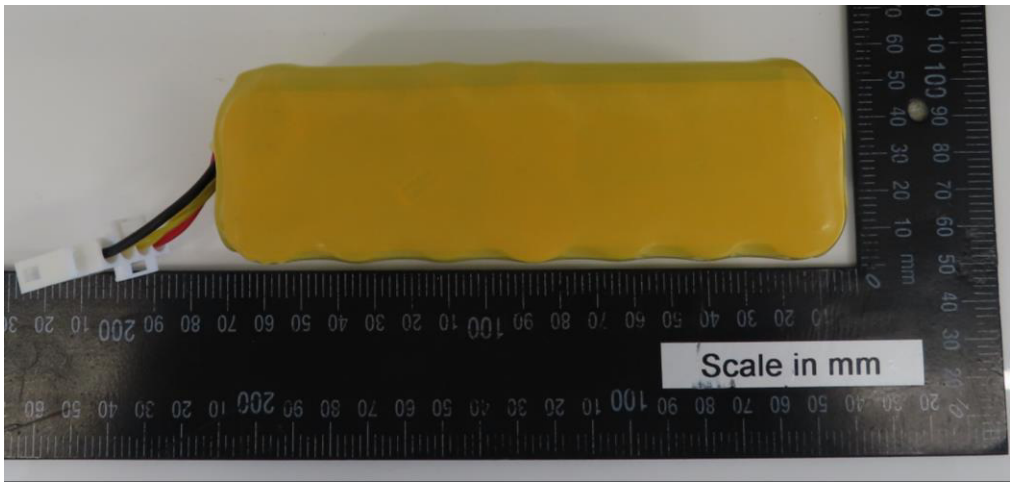
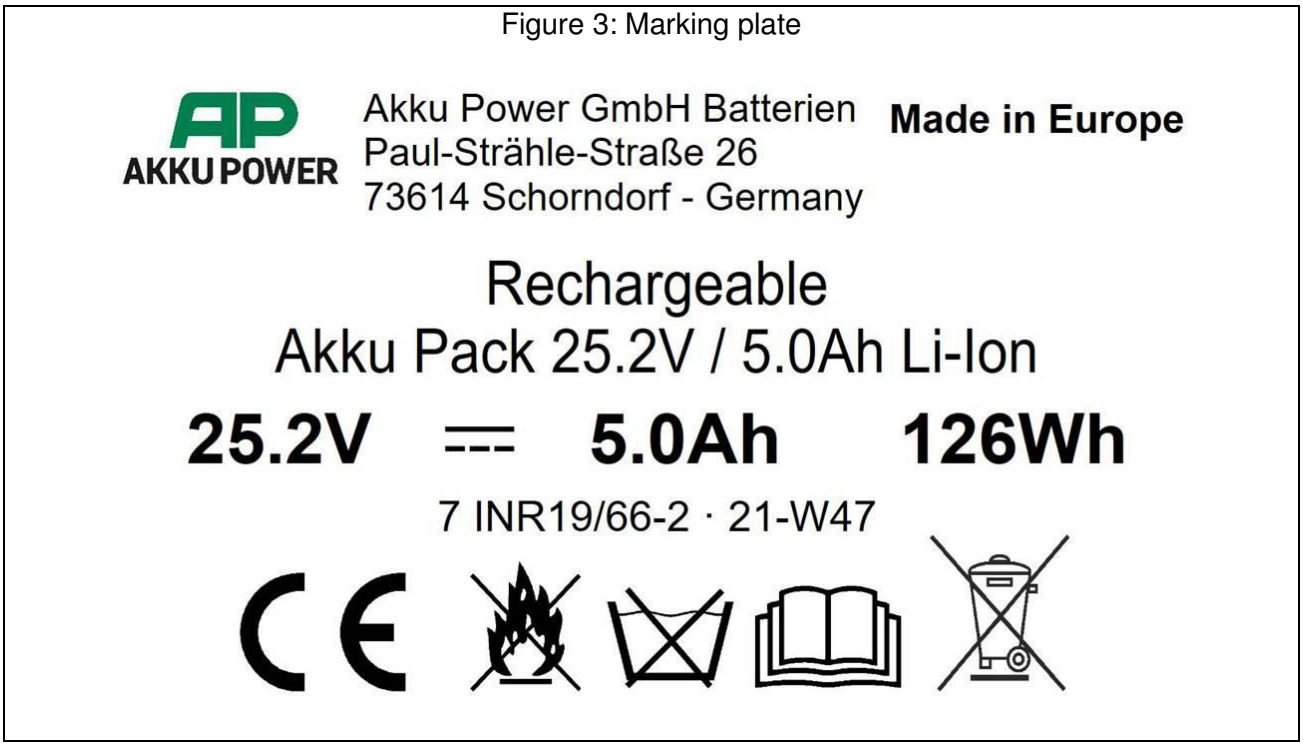


Figure 3: Marking plate



3. Testing

3.1 Specifications

UN Manual of Tests and Criteria, Part III; Section 38.3, Lithium metal and lithium ion batteries (UN ST/SG/AC.10/11/Rev.7/Amend.1)

All rechargeable battery types, including those composed of previously tested cells, shall be subjected to tests T.1 to T.5 and T.7.

Tests T.1 to T.5 shall be conducted in sequence on the same battery. Test T.7 may be conducted using undamaged batteries previously used in tests T.1 to T.5 for purposes of testing on cycled batteries.

As the gross weight of the battery type is not more than 12 kg, it is considered as a small battery.

When testing rechargeable batteries under tests T.1 to T.5 and T.7, four small batteries at first cycle, in fully charged states, and four small batteries after 25 cycles ending in fully charged states shall be tested.

The additional vibration test according to customer specifications has been performed for 8 additional samples.

3.2 Test matrix

The following test matrix provides an overview which specimen was part of which partial test.

Partial test	Specimen no.							
Conditioning	A	B	C	D	M	N	O	P
T.1 Altitude simulation	X	X	X	X	X	X	X	X
T.2 Thermal test	X	X	X	X	X	X	X	X
T.3 Vibration	X	X	X	X	X	X	X	X
T.4 Shock	X	X	X	X	X	X	X	X
T.5 External short circuit	X	X	X	X	X	X	X	X
T.6 Impact								
T.7 Overcharge	X	X	X	X	X	X	X	X
T.8 Forced Discharge								

Legend:

X - part of partial test, result passed X - part of partial test, result failed

O - part of partial test, result has to be evaluated by the customer 3.3 Conditioning

Methods of measurement according to:			
UN Manual of Tests and Criteria, Part III, Section 38.3, Lithium metal and lithium ion batteries (UN ST/SG/AC.10/11/Rev.7/Amend.1)			
Purpose of test:			
When a cell or battery type is to be tested under the following sub-sections, the cell or battery has to be conditioned. The preconditioning has been conducted by the applicant.			
Preconditioned samples: A, B, C, D (25 discharge-charge cycles, 100% SOC)			
Test result:			
Test requirements	☐ pass	☐ fail	☒ applied
Comment(s):			
Testing conducted:			
Person in charge:	-	Date:	-

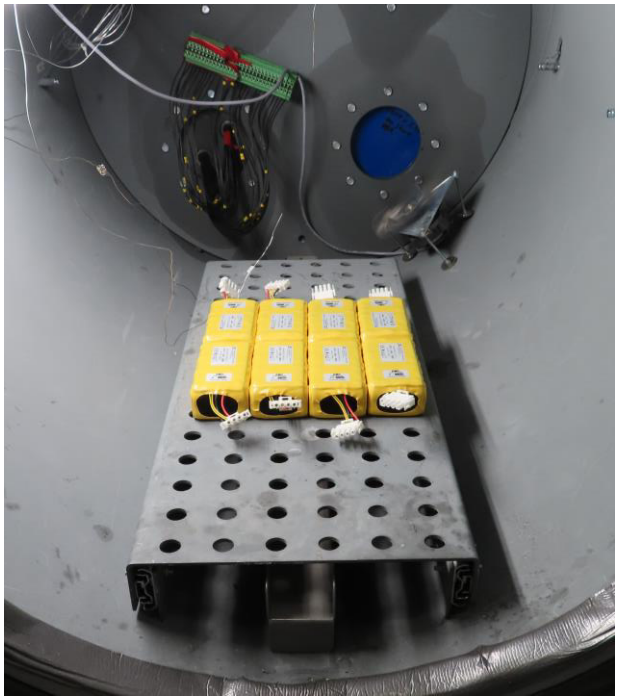
3.4 T.1 Altitude simulation

Method of measurement according to:			
UN Manual of Tests and Criteria, Part III, Section 38.3, Lithium metal and lithium ion batteries (UN ST/SG/AC.10/11/Rev.7/Amend.1)			
Purpose of test:			
This test simulates air transport under low pressure conditions.			
Test procedure:			
Absolutely atmospheric pressure:		Less than 11.6 kPa	
Temperature:		20±5°C	
Test duration:		6 h	
Samples under test:		A, B, C, D, M, N, O, P	
Used test equipment:			
Digital Multimeter			
Type:	175	Serial no.:	51280454
Manufacturer:	Fluke	Inventory no.	965
Last calibration:	2021-06-02		
Vakuumpumpe			
Type:	10003627	Serial no.:	--
Manufacturer:	WenLing HongBaoShi Vacuum Equipment Factory	Inventory no.	694
Last calibration:	N/A		
Piezoresistiver Drucktransmitter			
Type:	PAA-33X/80794	Serial no.:	676088
Manufacturer:	Keller Ges. für Druckmesstechnik mbH	Inventory no.	706
Last calibration:	2021-03-18		

Data Logger			
Type:	GM10-2E0/E1	Serial no.:	S5U611709
Manufacturer:	Yokogawa	Inventory no.	716
Last calibration:	N/A		
Thermocouple			
Type:	Type J	Serial no.:	A2
Manufacturer:	TMH	Inventory no.	718
Last calibration:	2019-03-13		
Test result:			
Test requirements	☒ pass	☐ fail	☐ applied
Comment(s):			
Testing conducted:			
Person in charge:	Christoph Kieß	Date:	2021-12-02

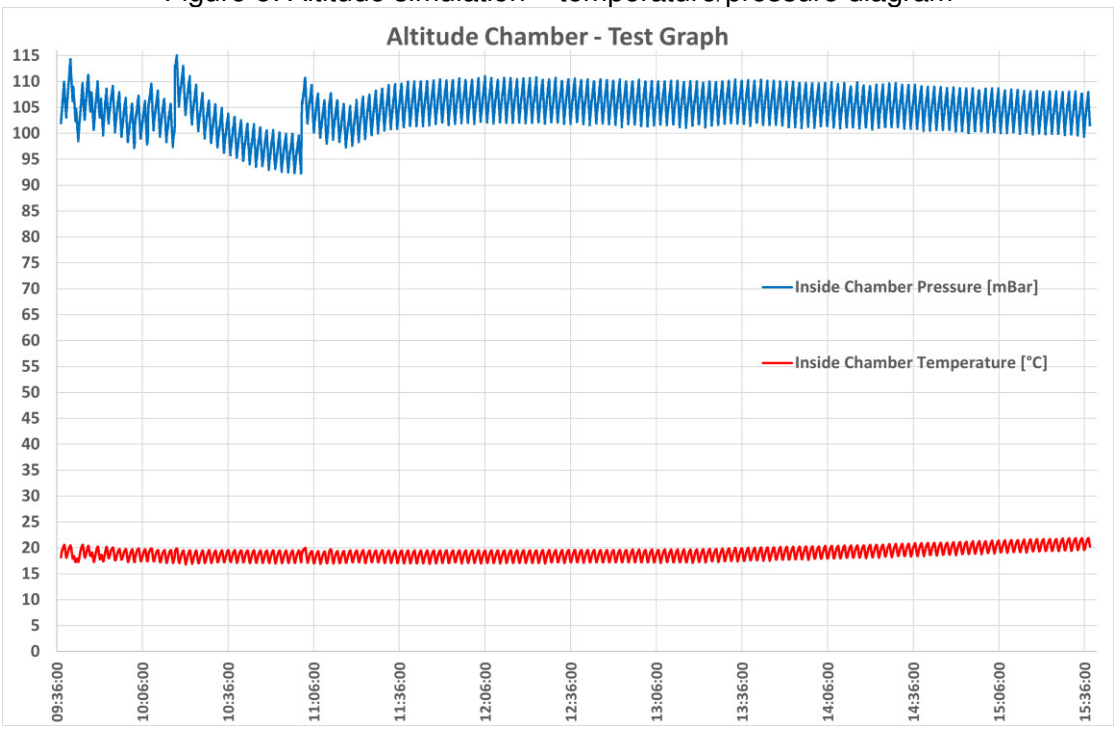
Pictures of the test setup:

Figure 4: Altitude simulation chamber



Pressure diagram:

Figure 5: Altitude simulation – temperature/pressure diagram



Test protocol:

Figure 6: Altitude simulation – test protocol

Sample No.	No. of cycles/state	Test Parameter						
		Voltage (V)		Min. value voltage (%)	No voltage loss (fail/passed)	Mass (g)	After test	Max. mass loss (%)
		Before test	After test					
A	25	28,69	28,69	90	passed	730	730	0,1
B	25	29,16	29,16		passed	730	730	
C	25	28,55	28,55		passed	730	730	
D	25	28,66	28,66		passed	730	730	
M	0	28,76	28,76		passed	730	730	
N	0	28,55	28,54		passed	730	730	
O	0	28,74	28,74		passed	730	730	
P	0	28,50	28,50		passed	730	730	

Sample No.	Test Parameter					
	No leackage	No venting	No disassembly	No rupture	No fire	Result
A	passed	passed	passed	passed	passed	passed
B	passed	passed	passed	passed	passed	passed
C	passed	passed	passed	passed	passed	passed
D	passed	passed	passed	passed	passed	passed
M	passed	passed	passed	passed	passed	passed
N	passed	passed	passed	passed	passed	passed
O	passed	passed	passed	passed	passed	passed
P	passed	passed	passed	passed	passed	passed

3.5 T.2 Thermal test

Method of measurement according to:
UN Manual of Tests and Criteria, Part III, Section 38.3, Lithium metal and lithium ion batteries (ST/SG/AC.10/11/Rev.7/ Amend.1)
Purpose of test:
This test assesses cell and battery seal integrity and internal electrical connections. The test is conducted using rapid and extreme temperature changes.

Test procedure:	
Temperature min.:	-40±2°C
Temperature max.:	+72±2 °C
Maximum test interval between test temperature extremes:	0.5 h
Storage time at each temperature:	6h
Number of cycles:	10
Devices under test:	A, B, C, D, M, N, O, P

Used test equipment:			
Climatic chamber			
Type:	WK3-340/40	Serial no.:	58226103910010
Manufacturer:	Weiss Umwelttechnik	Inventory no.	094
Last calibration:	2021-02-22		
Balance			
Type:	DE150K50NL	Serial no.:	WD100020954
Manufacturer:	Kern&Sohn	Inventory no.	093
Last calibration:	2021-02-22		
Digital Multi Meter			
Type:	175	Serial no.:	51280454
Manufacturer:	Fluke	Inventory no.	965
Last calibration:	2021-06-02		
Test result:			
Test requirements	☒ pass	☐ fail	☐ applied

Comment(s):			
Testing conducted:			
Person in charge:	Christoph Kieß	Date:	2021-12-03 – 2021-12-08

Pictures of the test setup:

Figure 7: Specimen inside of the climatic test chamber

Test protocol:

Figure 8: Thermal test – test protocol

Sample No.	No. of cycles/state	Test Parameter						
		Voltage (V)		Min. value voltage (%)	No voltage loss (fail/passed)	Mass (g)	After test	Max. mass loss (%)
		Before test	After test					
A	25	28,69	28,46	90	passed	730	730	0,1
B	25	29,16	28,85		passed	730	730	
C	25	28,55	28,28		passed	730	730	
D	25	28,66	28,41		passed	730	730	
P	0	28,76	28,50		passed	730	730	
S	0	28,54	28,32		passed	730	730	
H	0	28,74	28,51		passed	730	730	
I	0	28,50	28,29		passed	730	730	

Sample No.	Test Parameter					
	No leackage	No venting	No disassembly	No rupture	No fire	Result
O	passed	passed	passed	passed	passed	passed
J	passed	passed	passed	passed	passed	passed
Q	passed	passed	passed	passed	passed	passed
T	passed	passed	passed	passed	passed	passed
P	passed	passed	passed	passed	passed	passed
S	passed	passed	passed	passed	passed	passed
H	passed	passed	passed	passed	passed	passed
I	passed	passed	passed	passed	passed	passed

3.6 T.3 Vibration

Method of measurement according to:			
UN Manual of Tests and Criteria, Part III, Section 38.3, Lithium metal and lithium ion batteries (ST/SG/AC.10/11/Rev.7/Amend.1)			
Purpose of test:			
This test simulates vibration during transport.			
Test procedure:			
Wave form.:		Sinusoidal	
Logarithmic frequency sweep.:		Frequency:	Peak acceleration/amplitude:
		7 Hz-18 Hz	$1g_n$
		18 Hz-50 Hz	0,8 mm
		50 Hz – 200 Hz	$8g_n$
Number of sweeps per axis: (7 Hz – 200 Hz – 7 Hz)		12	
Number of axis to be tested:		3 mutually perpendicular mounting positions of the cell (one should be perpendicular to the terminal face).	
Temperature:		20±2°C	
Test time each axis:		3 h	
Total test duration:		9 h per sample	
Devices under test:		A, B, C, D, M, N, O, P	
Number of axis to be tested:		3 mutually perpendicular mounting positions of the cell (one should be perpendicular to the terminal face).	
Used test equipment:			
Shaker system			
Type:	S 56280/LS-340	Serial no.:	148/08
Manufacturer:	TIRA GmbH	Inventory no.	709
Last calibration:	N/A		
Amplifier			
Type:	A 1 02 5 015	Serial no.:	148/08
Manufacturer:	TIRA GmbH	Inventory no.	710
Last calibration:	N/A		
Acceleration sensor			

Type:	M352C65	Serial no.:	LW246420
Manufacturer:	PCB SYNOTECH	Inventory no.	714
Last calibration:	2021-05-28		
Balance			
Type:	DE150K50NL	Serial no.:	WD100020954
Manufacturer:	Kern&Sohn	Inventory no.	093
Last calibration:	2021-02-22		
Vibration Control System			
Type:	Medallion II	Serial no.:	952670e3
Manufacturer:	VR Vibration Research	Inventory no.	711
Last calibration:	2021-05-21		
Test result:			
Test requirements	☒ pass	☐ fail	☐ applied
Comment(s):			
Testing conducted:			
Person in charge:	Christoph Kieß	Date:	2021-12-20 – 2021-12-22

Pictures of the test setup:

Figure 9: Specimens – fitted towards X- direction

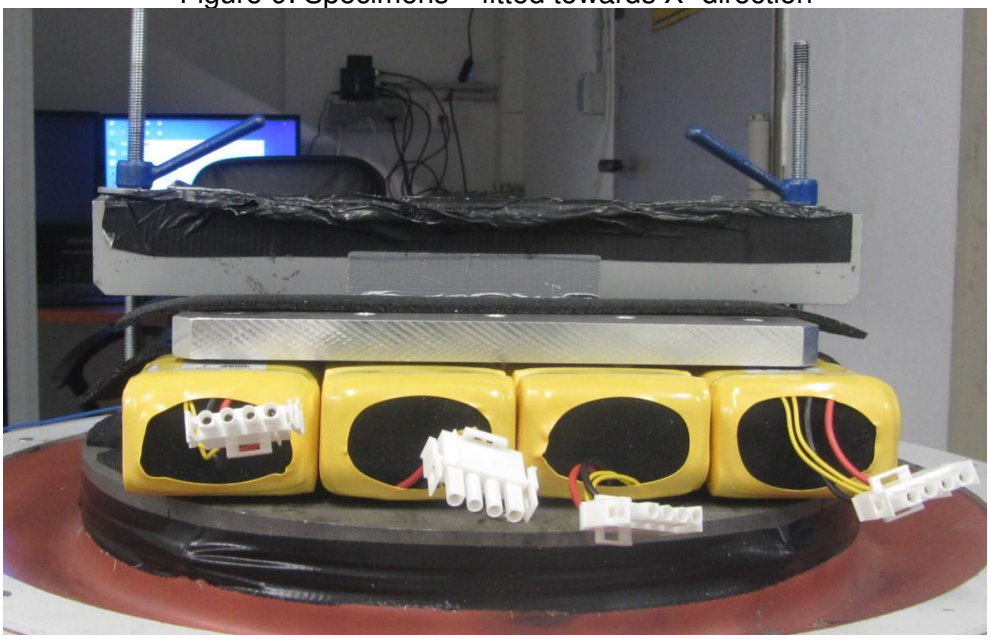


Figure 10: Specimens – fitted towards Y – direction

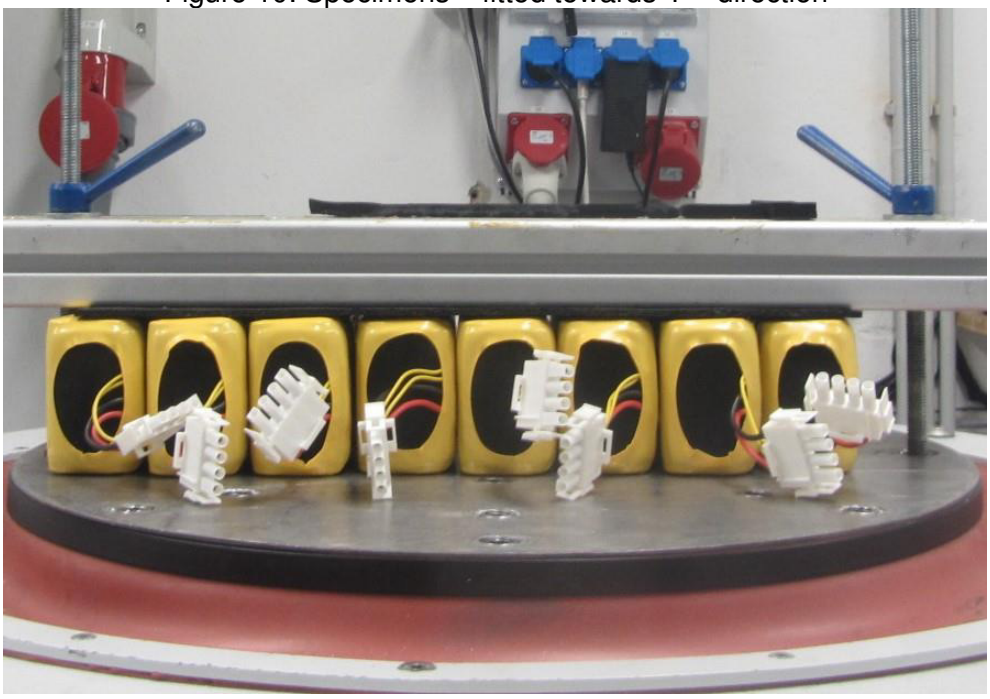
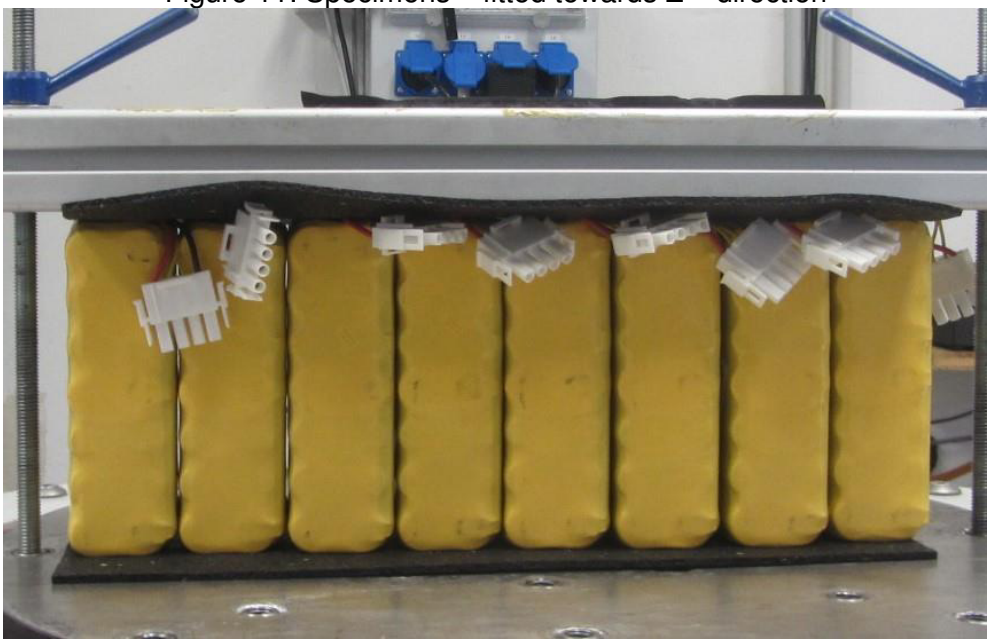
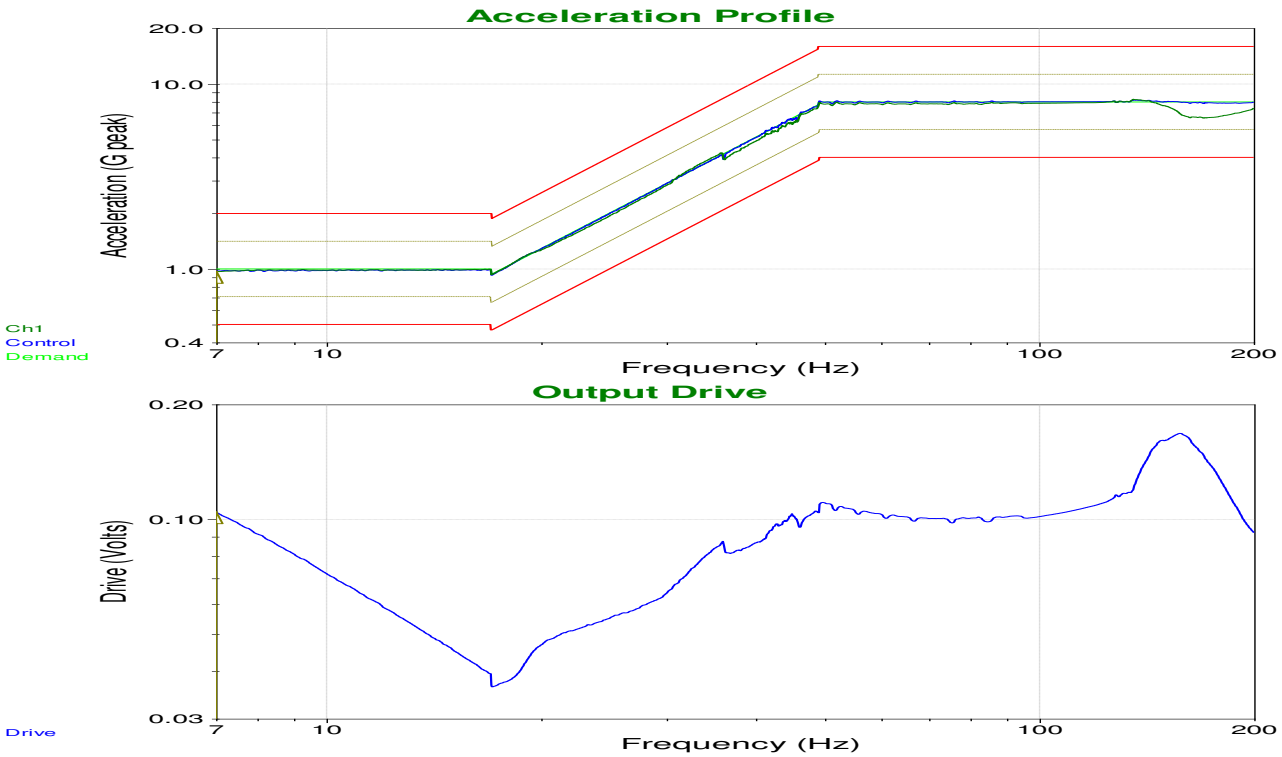


Figure 11: Specimens – fitted towards Z – direction



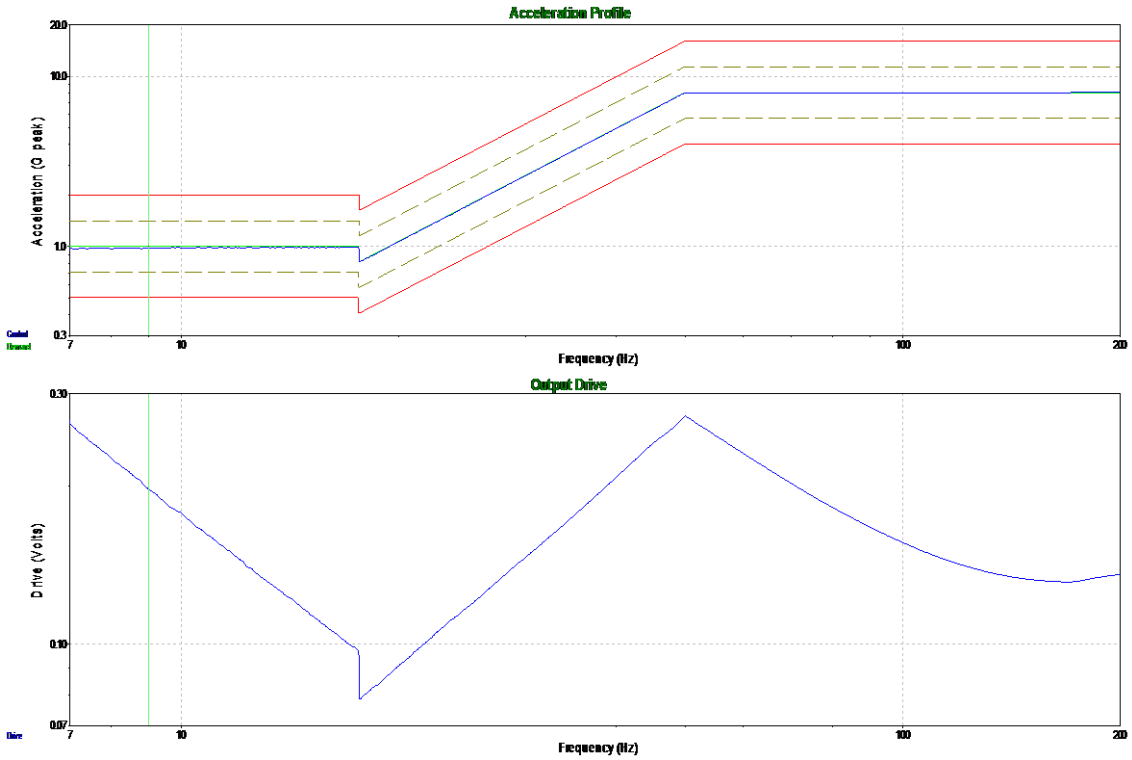
Vibration diagram X- direction:

Figures 12: Vibration diagram – X-direction



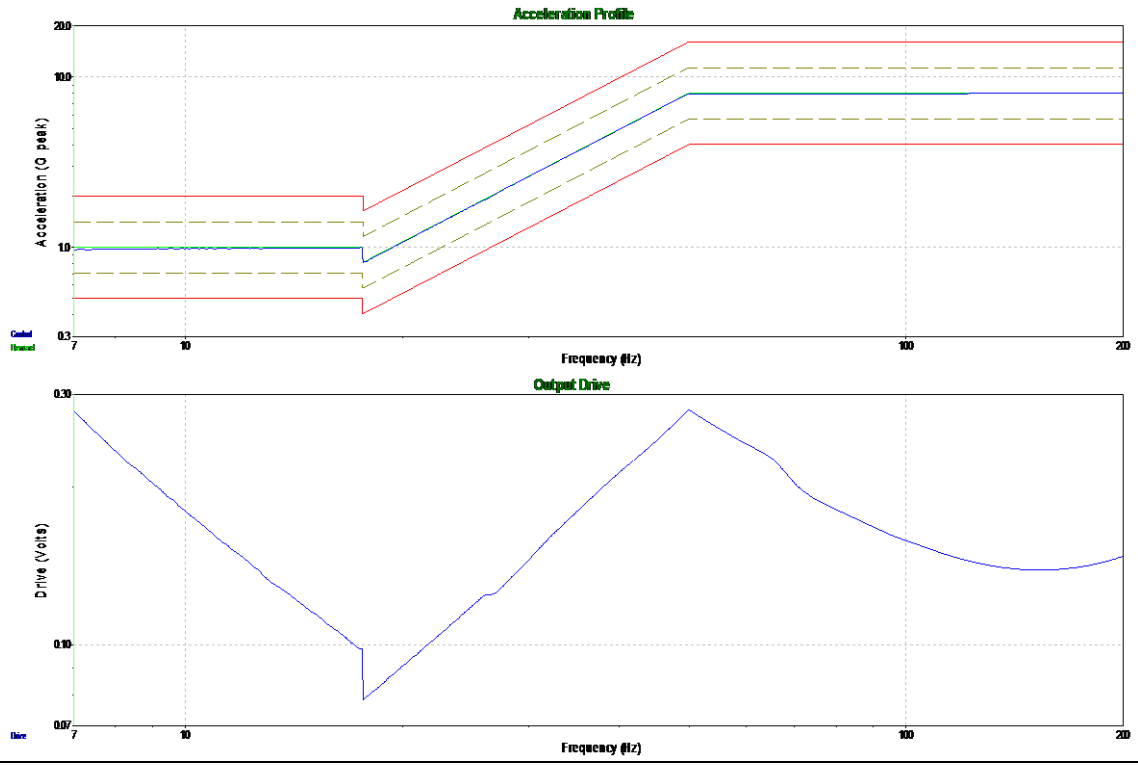
Vibration diagram Y- direction:

Figures 13: Vibration diagram – Y-direction



Vibration diagram Z - direction:

Figures 14: Vibration diagram – Z – direction



Test protocols:

Figures 15: Vibration simulation – test protocol

Sample No.	No. of cycles/state	Test Parameter						
		Voltage (V)		Min. value voltage (%)	No voltage loss (fail/passed)	Mass (g)	After test	Max. mass loss (%)
		Before test	After test					
A	25	28,36	28,35	90	passed	730	730	0,1
B	25	28,66	28,66		passed	730	730	
C	25	28,20	28,20		passed	730	730	
D	25	28,30	28,30		passed	730	730	
M	0	28,40	28,40		passed	730	730	
N	0	28,20	28,20		passed	730	730	
O	0	28,40	28,38		passed	730	730	
P	0	28,20	28,14		passed	730	730	

Sample No.	Test Parameter					
	No leackage	No venting	No disassembly	No rupture	No fire	Result
A	passed	passed	passed	passed	passed	passed
B	passed	passed	passed	passed	passed	passed
C	passed	passed	passed	passed	passed	passed
D	passed	passed	passed	passed	passed	passed
M	passed	passed	passed	passed	passed	passed
N	passed	passed	passed	passed	passed	passed
O	passed	passed	passed	passed	passed	passed
P	passed	passed	passed	passed	passed	passed

3.7 T.4 Shock

Method of measurement according to:			
UN Manual of Tests and Criteria, Part III, Section 38.3, Lithium metal and lithium ion batteries (ST/SG/AC.10/11/Rev.7/Amend.1)			
Purpose of test:			
This test simulates possible impacts during transport.			
Test procedure:			
Wave form.:		Half-sine	
Peak acceleration:		150gn	
Pulse duration:		6 ms	
Number of shocks per half-axis:		3	
Number of axis to be tested:		6 half-axes (3 in the positive direction and 3 in the negative direction)	
Total number of shocks:		18	
Temperature:		20±2°C	
Devices under test:		A, B, C, D, M, N, O, P	
Used test equipment:			
Acceleration sensor			
Type:	353B03	Serial no.:	LW217039
Manufacturer:	PCB SYNOTECH	Inventory no.	713
Last calibration:	2021-05-28		
Vibration Control System			
Type:	Medallion II	Serial no.:	952670e3
Manufacturer:	VR Vibration Research	Inventory no.	711
Last calibration:	2021-05-25		
Shock Test System			
Type:	HSKT10	Serial no.:	-
Manufacturer:	Labtone test Equipment Co., Ltd	Inventory no.	872
Last calibration:	N/A		
Test result:			
Test requirements	☒ pass	☐ fail	☐ applied
Comment(s):			
Testing conducted:			
Person in charge:	Christoph Kieß	Date:	2021-12-28

Pictures of the test setup:

Figure 16: Specimens fitted towards X-direction (the test is conducted by parts, the minus direction obtained by turning the sample)

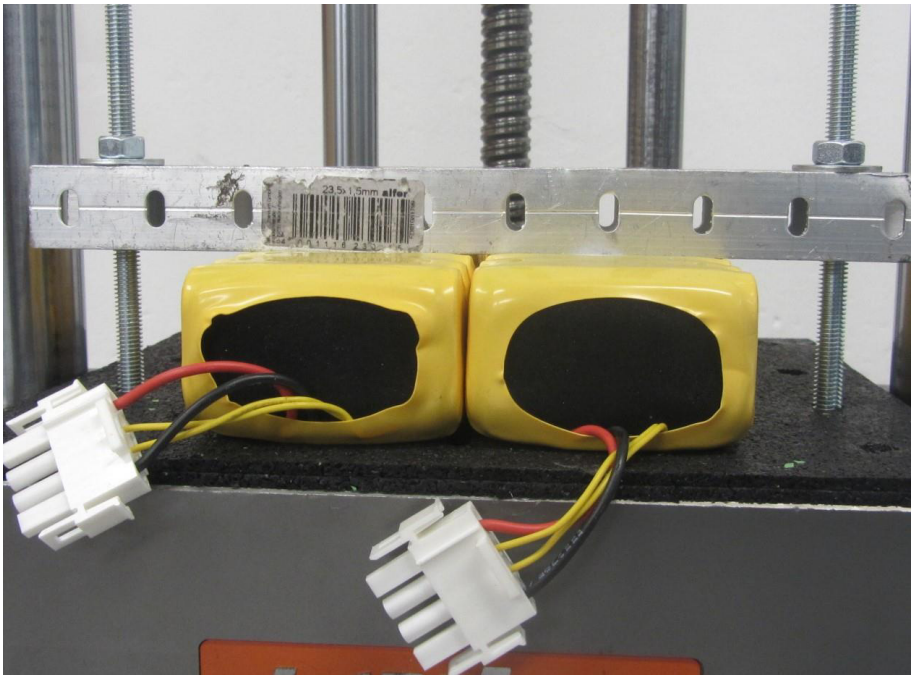


Figure 17: Specimens fitted toward -Y direction (the test is conducted by parts, the minus direction obtained by turning the sample)

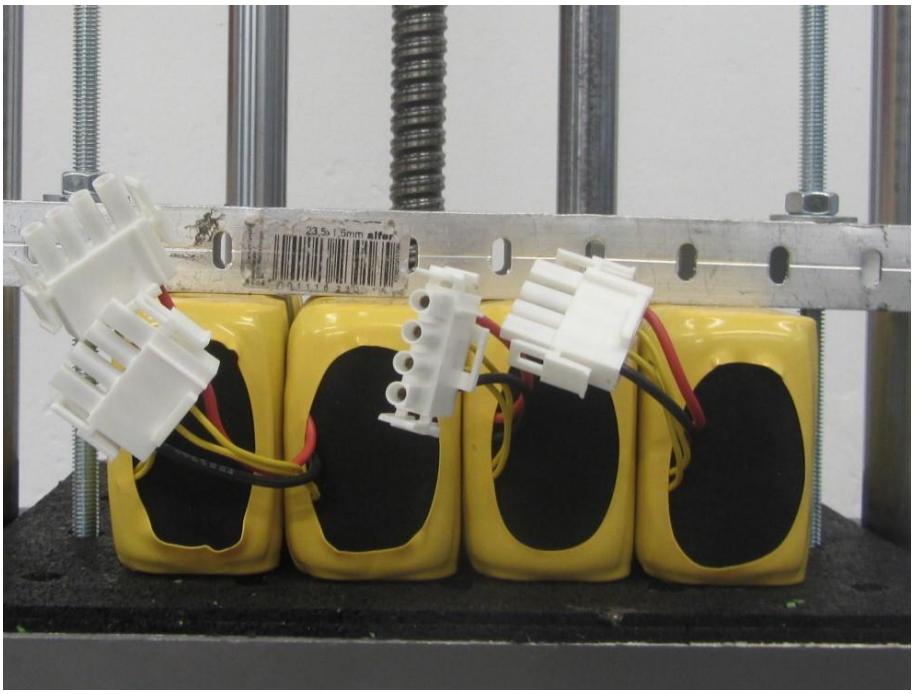
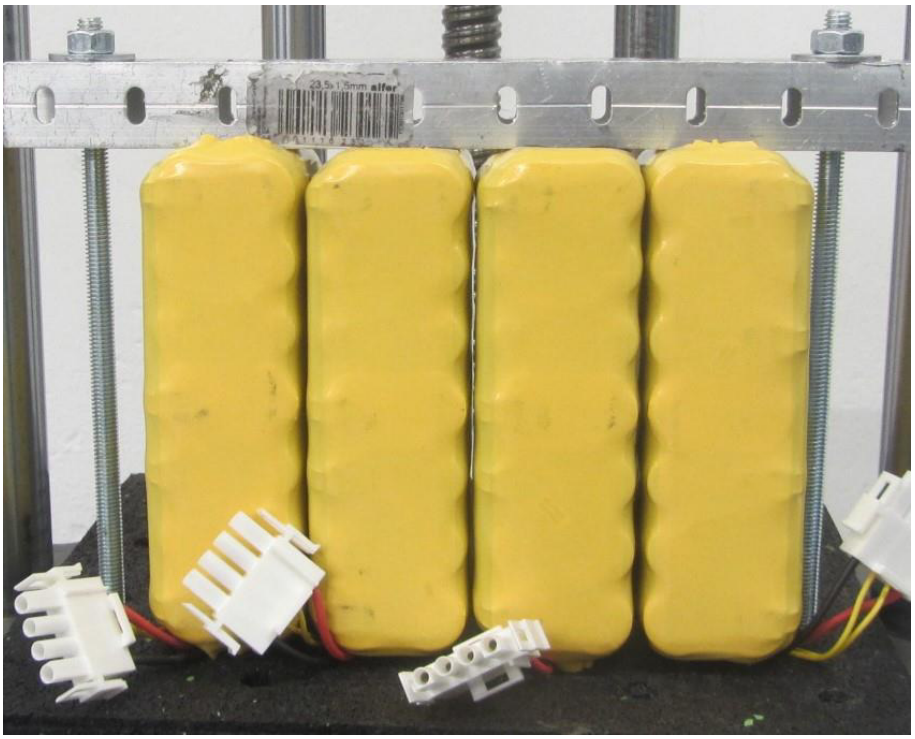
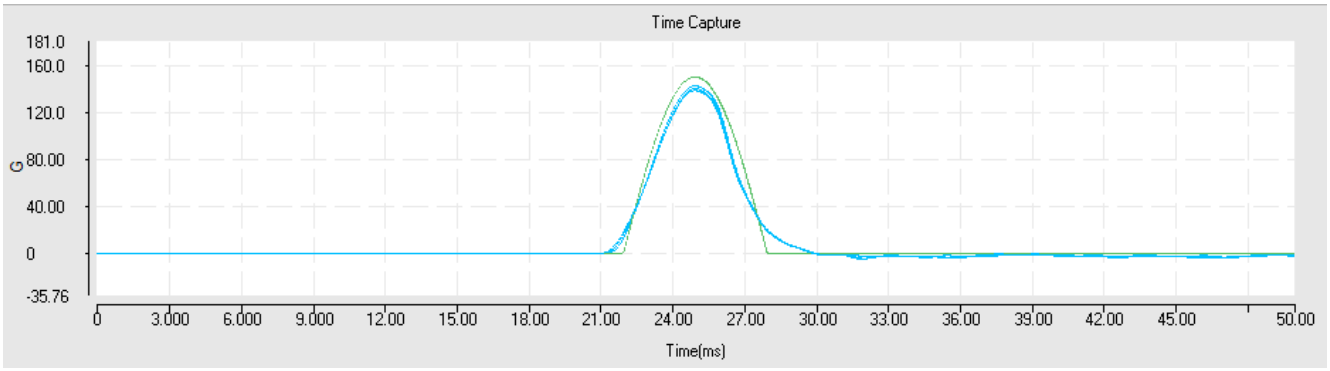


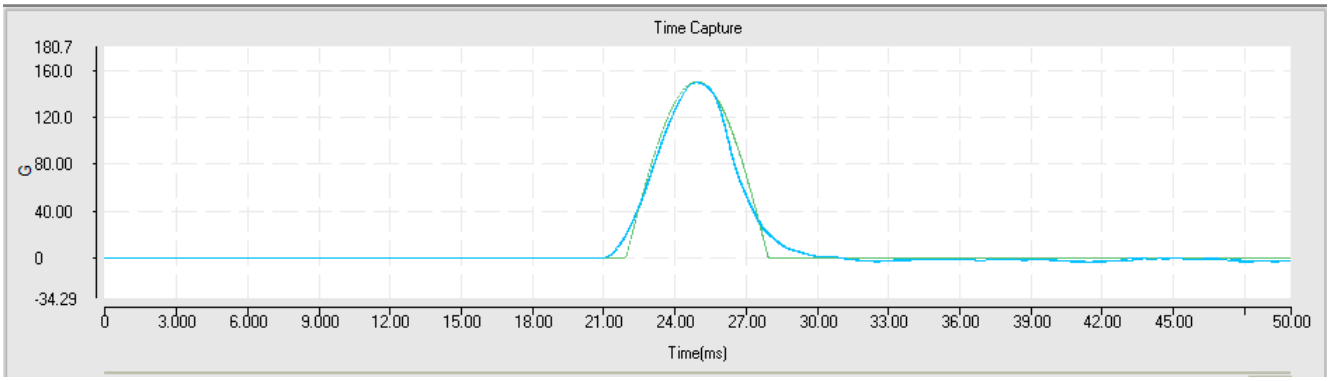
Figure 18: Specimens fitted towards Z direction

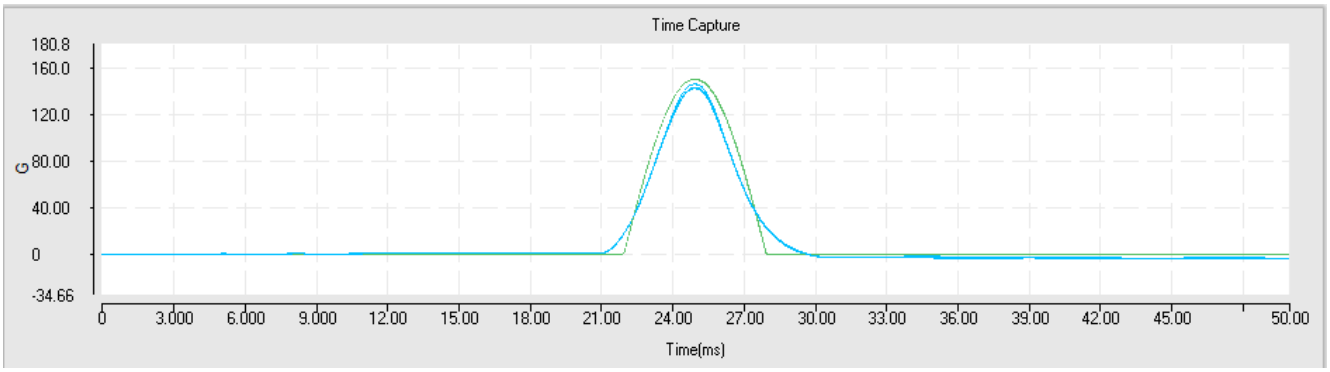


Shock diagram +X direction:

Figures 19-24: Shock diagram
(the diagrams shown are representative of all the shocks performed)







Test protocol:

Figure 25: Shock – test protocol

Sample No.	No. of cycles/state	Test Parameter						
		Voltage (V)		Min. value voltage (%)	No voltage loss (fail/passed)	Mass (g)	After test	Max. mass loss (%)
		Before test	After test					
A	25	28,35	28,35	90	passed	730	730	0,1
B	25	28,66	28,66		passed	730	730	
C	25	28,20	28,20		passed	730	730	
D	25	28,30	28,30		passed	730	730	
M	0	28,40	28,40		passed	730	730	
N	0	28,20	28,20		passed	730	730	
O	0	28,38	28,38		passed	730	730	
P	0	28,14	28,14		passed	730	730	

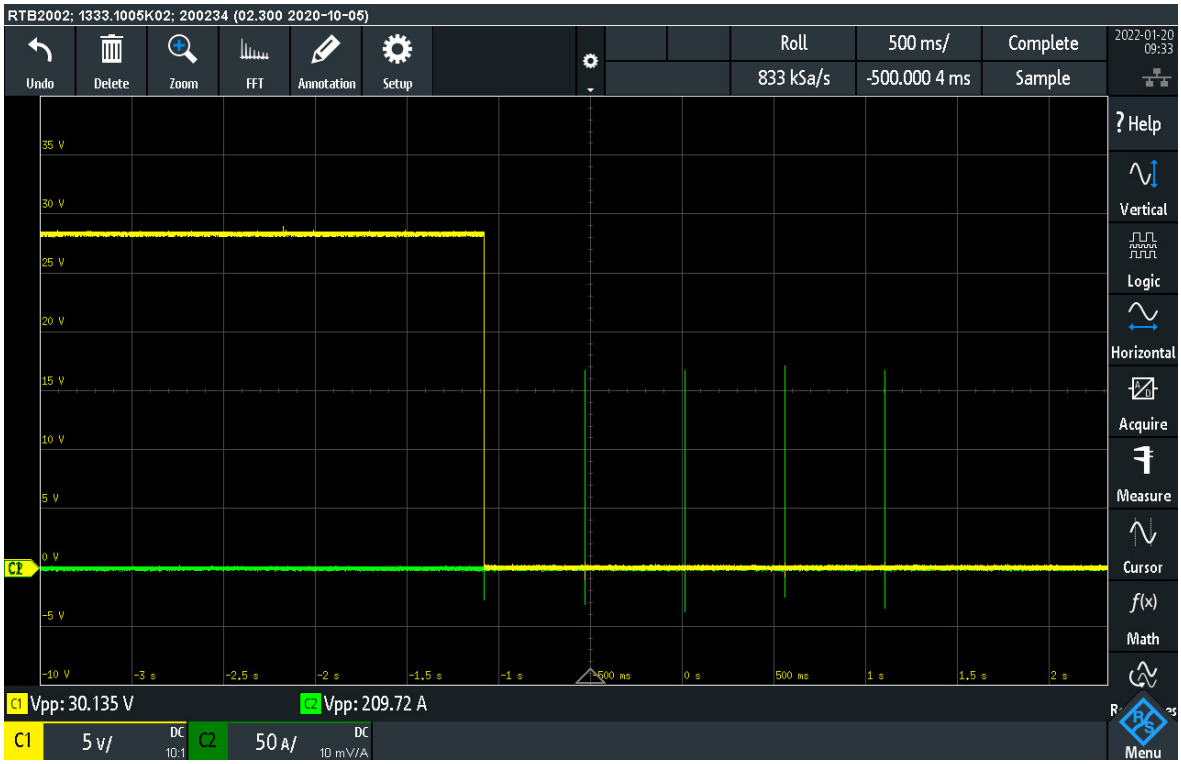
Sample No.	Test Parameter					
	No leackage	No venting	No disassembly	No rupture	No fire	Result
A	passed	passed	passed	passed	passed	passed
B	passed	passed	passed	passed	passed	passed
C	passed	passed	passed	passed	passed	passed
D	passed	passed	passed	passed	passed	passed
M	passed	passed	passed	passed	passed	passed
N	passed	passed	passed	passed	passed	passed
O	passed	passed	passed	passed	passed	passed
P	passed	passed	passed	passed	passed	passed

3.8 T.5 External short circuit

Method of measurement according to:			
UN Manual of Tests and Criteria, Part III, Section 38.3, Lithium metal and lithium ion batteries (ST/SG/AC.10/11/Rev.7/Amend.1)			
Purpose of test:			
This test simulates an external shirt circuit.			
Test procedure:			
Temperature:		57 ± 4°C	
Total external resistance:		85 mΩ (<0,1Ω)	
Testing duration:		1 h	
Observation time:		6 h	
Devices under test:		A, B, C, D, M, N, O, P	
Used test equipment:			
Climatic Chamber			
Type:	WK3-340/40	Serial no.:	58226103910010
Manufacturer:	Weiss Umwelttechnik	Inventory no.	094
Last calibration:	2021-05-11		
Programmable LCR-Bridge			
Type:	HM8118	Serial no.:	022021739
Manufacturer:	HAMEG	Inventory no.	305
Last calibration:	2021-08-30		
Oscilloscope			
Type:	DLM2024	Serial no.:	91K633899
Manufacturer:	Yokogawa	Inventory no.	200
Last calibration:	2021-02-25		
Multiplexer for Thermocouples Type K			
Type:	7700	Serial no.:	1389431
Manufacturer:	Keithley	Inventory no.	148
Last calibration:	2021-02-18		

Thermocouple type K			
Type:	TT-KI-30-SLE-3200M-DAkkS-T6	Serial no.:	N/A
Manufacturer:	OMEGA Engineering inc.	Inventory no.	643
Last calibration:	2021-08-23		
Digital Multimeter / Datalogger (Temp.)			
Type:	DAQ6510	Serial no.:	4379330
Manufacturer:	Keithley	Inventory no.	875
Last calibration:	2021-12-08		
Test result:			
Test requirements	☒ pass	☐ fail	☐ applied
Comment(s):			
Testing conducted:			
Person in charge:	Christoph Kieß	Date:	2021-01-19

Figure 26: External short circuit – Test graph



Test protocol:

Figure 27 External short circuit – test protocol

Sample No.	No. of cycles/state	Test Parameter				
		Temp < +170°C	No disassembly	No rupture	No fire	Result
A	25	passed	passed	passed	passed	passed
B	25	passed	passed	passed	passed	passed
C	25	passed	passed	passed	passed	passed
D	25	passed	passed	passed	passed	passed
M	0	passed	passed	passed	passed	passed
N	0	passed	passed	passed	passed	passed
O	0	passed	passed	passed	passed	passed
P	0	passed	passed	passed	passed	passed

3.9 T.7 Overcharge

Method of measurement according to:			
UN Manual of Tests and Criteria, Part III, Section 38.3, Lithium metal and lithium ion batteries (ST/SG/AC.10/11/Rev.7/Amend.1)			
Purpose of test:			
This test evaluates the ability of a rechargeable battery to withstand an overcharge condition.			
Test procedure:			
Charge current:	4,3 A	A	
Charge Voltage:	33,6 V	V	
Temperature:	20±2°C		
Testing duration:	24 h		
Observation time:	7 days		
Devices under test:	A, B, C, D, M, N, O, P		
Used test equipment:			
Digital Multimeter			
Type:	175	Serial no.:	2021-06-02
Manufacturer:	Fluke	Inventory no.	966
Last calibration:	2021-06-02		
Temperature meter / Datalogger			
Type:	SDL200	Serial no.:	H409518
Manufacturer:	extech	Inventory no.	986
Last calibration:	2021-06-21		
4x Regenerative Power System			
Type:	IT-M3632	Serial no.:	803126073767080006 803126073767080002 803126073767080004 803126073767080001
Manufacturer:	ITECH ELECTRONIC CO., LTD.	Inventory no.	1007 1008 1009 1010
Current Clamp			
Type:	365	Serial no.:	51560196WS
Manufacturer:	Fluke	Inventory no.	933

Last calibration:	2021-02-25		
Ambient Logger			
Type:	Saveris 2 (H1)	Serial no.:	0054636198
Manufacturer:	Testo Se & Co. KGaA	Inventory no.	755
Last calibration:	2021-05-03		
Thermocouple Type K			
Type:	TT-KI-30-SLE-3200M-DAkkS-T6	Serial no.:	N/A
Manufacturer:	OMEGA Engineering inc.	Inventory no.	643
Last calibration:	2021-08-23		
Test result:			
Test requirements	☒ pass	☐ fail	☐ applied
Comment(s):			
Testing conducted:			
Person in charge:	Christoph Kieß	Date:	2022-01-20 – 2022-01-21 2022-01-21 – 2022-01-28

Test protocol:

Figure 28: Overcharge – test protocol

T.7 Overcharge				
Sample No.	No. of cycles/state	Test results		
		No disassembly	No fire	Result
A	25	passed	passed	passed
B	25	passed	passed	passed
C	25	passed	passed	passed
D	25	passed	passed	passed
M	0	passed	passed	passed
N	0	passed	passed	passed
O	0	passed	passed	passed
P	0	passed	passed	passed

Charge current(A)	4,3

Charge Voltage(V)	33,6

4. Summary

Lithium cell or battery test summary in accordance with sub/section 38.3 of Manual of Tests and Criteria	
Test item description	
Unit	Li-Ion Rechargeable Battery
Trade Mark	Akku Power GmbH Batterien
Manufacturer	Akku Power GmbH Batterien
Model/Type reference	15.2V 5.0Ah 126Wh
Manufacturer	
Manufacturer's name	Akku Power GmbH Batterien
Address	Paul-Strähle-Str. 26 D-73614 Schorndorf Germany
Phone number	+49 71 81 977 35-0
E-mail address	info@akku-power.com
Website	https://akku-power.com/de/home
Testing laboratory	
Name	Kiwa Primara GmbH
Address	Gewerbestraße 28, 87600 Kaufbeuren; Germany
Phone number	+49 (0)40 / 30 39 49 - 60
E-mail address	info@kiwa.de
Website	https://www.kiwa.com/de/de/uber-kiwa/tochterfirmen/kiwa-primara-gmbh/primara/
Test report	
Number	21PP644-01_0
Date of issue	2022-06-08
Battery description	
Type	Li-Ion Rechargeable Battery 7S2P
Mass	730g
Energy	126 Wh
Physical description	135,5mm x 68mm x 43mm
Test result	
All performed tests were successfully passed	

Tests and criteria	Requirement	Verdict
T.1 Altitude simulation	Cells and batteries meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.	Passed
T.2 Thermal test		Passed
T.3 Vibration		Passed
T.4 Shock		Passed
T.5 External short circuit	Cells and batteries meet this	Passed

	requirement if their external temperature does not exceed 170°C and there is no disassembly, no rupture and no fire during the test and within six hours after test.	
T.6 Impact	Cells and component cells meet this requirement if their external temperature does not exceed 170°C and there is no disassembly and no fire within six hours of this test.	N/A
T.7 Overcharge	Rechargeable batteries meet this requirement if there is no disassembly and no fire during the test and within seven days of this test.	Passed
T.8: Forced discharge	Primary or rechargeable cells meet this requirement if there is no disassembly and no fire within seven days of this test.	N/A

END OF THE REPORT