

UN/DOT 38.3

UN 38.3 Test Summary Report for Lithium Batteries



ELERIX EX-L280

[a] Cell Battery Product || Tested Type Part #: CB71173204EB || Same Type Part #: EX-L280

Lithium Iron Phosphate Cell

Lithium Cell or Battery Test Summary in Accordance with Section 2.9.4 UN Model Regulations and Sub-section 38.3 of the UN Manual of Tests and Criteria, Part III, subsection 38.3.5


TEST RESULT: PASSED

[b] Applicant	ELERIX LTD
	Enterprise House 2 Pass Street, Oldham, Manchester, United Kingdom, OL9 6HZ
	www.elerix.com

EU Representative	GIWAL LTD, o.z.
	Sterboholska 1404/104, 102 00 Praha 10 Czech Republic, EU
	www.giwal.com

[c] Certified Laboratory	Vkan Certification & Testing Co., Ltd. - No.3, Tiantai 1st Road, Kaitai Avenue, Science City, Guangzhou, Guangdong, China. - Building D, BASIGO INTELLIGENT, No.179, Guangpu East Road, Huangpu District, Guangzhou, P. R. China.		
	 160008222171		 中国认可 国际互认 检测 TESTING CNAS L0095

[d] Test Report No/ID.	RZUN2021-0923	[e] Date of issue	2021-03-02
Test Results	PASSED	Validity	Permanent
[i] Tested According To:	ST/SG/AC.10/11/Rev.6/Section 38.3 UN Manual of Tests and Criteria, Part III, sub-section 38.3. third revised edition, am. 1		
[h] Battery assembly	<input checked="" type="checkbox"/> Not Applicable. <input type="checkbox"/> UN38.3.3 (f) <input type="checkbox"/> UN38.3.3 (g)		

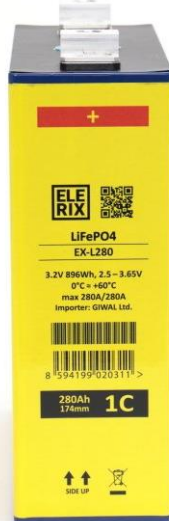
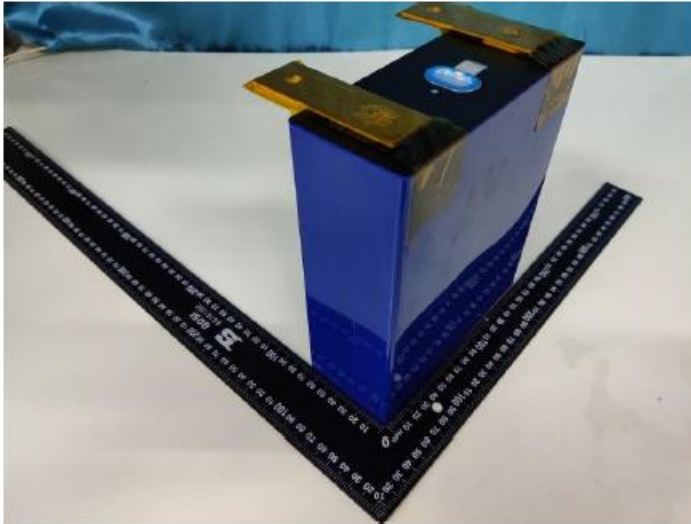
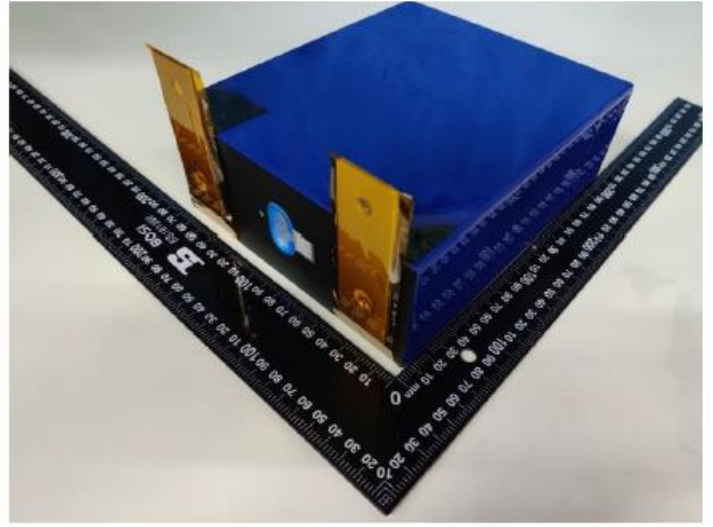
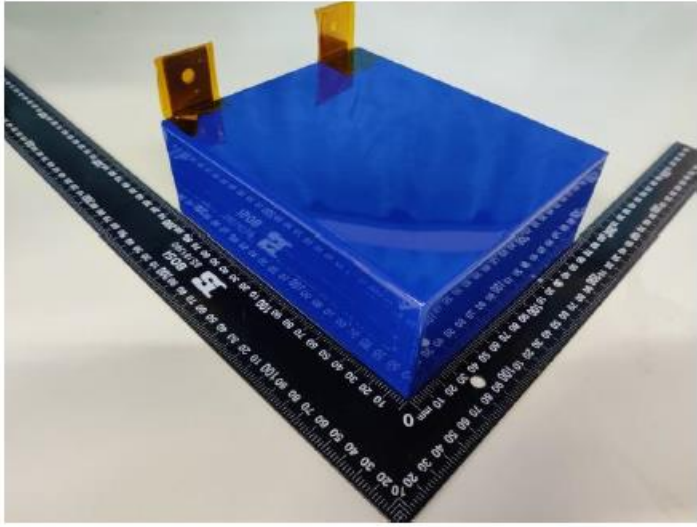
	[j] Signatory Issued: 2021/8/13 <i>Kurt Sanders</i> Chief Technology Officer
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APPLICANT	ELERIX LTD
	Enterprise House 2 Pass Street, Oldham, Manchester, United Kingdom, OL9 6HZ
	www.elerix.com
BRAND	ELERIX (OEM)
[f] (iv) DESCRIPTION / MODEL	EX-L280
[f] (v)	<input checked="" type="checkbox"/> Cell <input type="checkbox"/> Battery <input type="checkbox"/> Product
[f] (i) Chemistry	Li-metal (Li-Fe)
Nominal Voltage	3.2 V
Nominal Capacity	280 Ah
[f] (iii) Nominal Energy – Watthour rating	896 Wh
[f] (ii) Nominal Weight – Mass (g)	5470 g

TEST DATA RESULTS	
[g] List of Tests Conducted - Test Report ID	RZUN2021-0923
38.3.4.1 - T1 – Altitude Simulation (Primary and Secondary Cells and Batteries) Low pressure testing that simulates unpressurized airplane cargo area at 15,000-meter altitude. After storing batteries at 11.6kPa for >6 hours, these criteria shall be met: no mass loss, leaking, venting, disassembly, rupture or fire, and voltage within 10% of pre-test voltage.	PASSED
38.3.4.2 - T2 – Thermal Test (Primary and Secondary Cells and Batteries) Test covers changes in temperature extremes from -40C to +75C. Batteries are stored for 6 hours at -40C (12 hours for large cells/batteries), then 6 hours at +75C (12 hours for large cells/batteries), for a total of 10 cycles.	PASSED
38.3.4.3 - T3 – Vibration (Primary and Secondary Cells and Batteries) Test simulates vibration during transportation. Test is a Sine Sweep: 7Hz – 200Hz – 7Hz in 15 Minutes; 12 Sweeps (3 hours); 3 mutually perpendicular axes.	PASSED
38.3.4.4 - T4 – Shock (Primary and Secondary Cells and Batteries) Test also simulates vibration during transportation. Test is a Half-Sine pulse: 150G/6ms for small cells/batteries; 50G/11ms for large cells/batteries; 3 pulses per direction; 6 directions (+/-z, +/-x, +/-y).	PASSED
38.3.4.5 - T5 – External Short Circuit (Primary and Secondary Cells and Batteries) This test simulates an external short to the terminals of the cell or battery. At temperature of +55C, apply short circuit (<0.1ohm) across terminals. Maintain at least an hour after sample temperature returns to +55 +/-2°C. Pass criteria are: Case temperature does not exceed +170°C and no disassembly, rupture, or fire within 6 hours of test. Fuse, current limiting circuit, and venting mechanism activation are allowable.	PASSED
38.3.4.5 - T6 – Impact (Primary and Secondary Cells) This test is only applicable to primary and secondary cells. For cylindrical cells >20mm diameter, it simulates impact to case of cell.	PASSED
38.3.4.5 - T7 – Overcharge (Secondary Batteries) This test is for secondary or rechargeable batteries only. It simulates an overcharge condition on a rechargeable battery: 2x the manufacturer’s recommended charge current for 24 hours. Then battery shall be monitored for 7 days for fire or disassembly.	PASSED
38.3.4.5 - T8 – Forced Discharge (Primary and Secondary Cells) This testing simulates a forced discharge condition for primary and secondary cells only.	PASSED
SUMMARY OF PERFORMED TESTS	ALL PASSED

PHOTOS OF PRODUCTS AND SAMPLES

Cell (CB71173204EB 3,2V 280Ah 896Wh)



TECHNICAL SUMMARY OF THE TEST DATA

Ref. No. RZUN2021-0923

Table1: T1~T5 / 表 1. 试验 1~试验 5

Sample No. 样品号	Mass prior to test / 试验前质量(kg)	OCV prior to test / 试验前电压(V)	Test T.1: Altitude simulation/ 试验 T.1: 高度模拟		Test T.2: Thermal test/ 试验 T.2: 温度试验		Test T.3: Vibration/ 试验 T.3: 振动		Test T.4: Shock/ 试验 T.4: 冲击		Test T.5: External Short Circuit/ 试验 T.5 外部短路
			Mass loss(%) 质量损失(%)	Change ratio 电压比(%)	Mass loss(%) 质量损失(%)	Change ratio 电压比(%)	Mass loss(%) 质量损失(%)	Change ratio 电压比(%)	Mass loss(%) 质量损失(%)	Change ratio 电压比(%)	Temp. (°C) 温度 (°C)
c1#	5,45	3,439	0,000	97,27	0,000	99,70	0,000	100,00	0,000	100,00	59,4
c2#	5,47	3,431	0,000	97,44	0,000	99,73	0,000	100,00	0,000	100,00	59,2
c3#	5,46	3,435	0,000	97,29	0,000	99,76	0,000	100,00	0,000	100,00	59,1
c4#	5,46	3,430	0,000	97,49	0,000	99,70	0,000	100,00	0,000	100,00	59,3
c5#	5,47	3,433	0,000	97,35	0,000	99,70	0,000	100,00	0,000	100,00	59,5
c6#	5,45	3,431	0,000	97,46	0,000	99,67	0,000	100,00	0,000	100,00	59,3
c7#	5,46	3,434	0,000	97,35	0,000	99,73	0,000	100,00	0,000	100,00	59,4
c8#	5,46	3,432	0,000	97,47	0,000	99,64	0,000	100,00	0,000	100,00	59,2
c9#	5,45	3,435	0,000	97,26	0,000	99,73	0,000	100,00	0,000	100,00	59,6
c10#	5,46	3,433	0,000	97,38	0,000	99,67	0,000	100,00	0,000	100,00	59,4

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Table2: Crush / 表 2: 挤压

Test T.6: Crush/试验 T.6: 挤压	Sample No. 样品号	c11#	c12#	c13#	c14#	c15#	c16#	c17#	c18#	c19#	c20#
	OCV prior to test / 试验前电压 (V)	3,284	3,290	3,287	3,292	3,289	3,285	3,288	3,286	3,291	3,287
	Temp. (°C) 温度 (°C)	23,3	23,4	23,4	23,4	23,4	23,3	23,4	23,4	23,4	23,4

Table 3: Forced discharge / 表 3. 强制放电

Test T.8: Forced discharge /试验 T.8: 强制放电	Sample No. 样品号	c21#	c22#	c23#	c24#	c25#	c26#	c27#	c28#	c29#	c30#
	OCV prior to test / 试验前电压(V)	2,719	2,728	2,731	2,739	2,735	2,740	2,731	2,736	2,730	2,738
	Sample No. 样品号	c21#	c22#	c23#	c24#	c25#	c26#	c27#	c28#	c29#	c30#
	OCV prior to test / 试验前电压(V)	2,743	2,736	2,749	2,741	2,742	2,739	2,744	2,733	2,736	2,735