第三方权威测试机构出具的测试报告和认证证书（LF280K电芯）

- **第三方检测机构测试报告**

序号	所属部件	证书名称
1	LF280K方形磷酸铁锂电芯	LF280K电芯型式试验报告-GB/T 36276-2018《电力储能用锂离子电池》(2022)
2	LF280K方形磷酸铁锂电芯	LF280K电芯型式试验报告-GB/T 31484-2015《电动汽车用动力蓄电池循环寿命要求及试验方法》(2022)
3	LF280K方形磷酸铁锂电芯	LF280K电芯型式试验报告-GB/T 38031-2020《电动汽车用动力蓄电池安全要求》(2022)
4	LF280K方形磷酸铁锂电芯	LF280K电芯型式试验报告-GB/T 38032-2020《电动客车安全要求》(2022)
5	LF280K方形磷酸铁锂电芯	LF280K电芯IEC 62619 (莱茵)测试报告(2021)
6	LF280K方形磷酸铁锂电芯	LF280K电芯IEC 62660-3 (联鼎)测试报告(2022)
7	LF280K方形磷酸铁锂电芯	LF280K电芯UL1642测试报告(2021)
8	LF280K方形磷酸铁锂电芯	LF280K电芯UL1973测试报告(2021)
9	LF280K方形磷酸铁锂电芯	LF280K电芯UL9540A测试报告(2022)
10	LF280K方形磷酸铁锂电芯	LF280K电芯RoHS测试报告(2021)
11	LF280K方形磷酸铁锂电芯	LF280K电芯REACH测试报告(2021)
12	LF280K方形磷酸铁锂电芯	LF280K电芯UN38.3检测报告(2022)
13	LF280K方形磷酸铁锂电芯	LF280K电芯危特报告(2022)
14	LF280K方形磷酸铁锂电芯	LF280K绿色产品测试报告(2022)

序号	所属部件	证书名称
1	LF280K方形磷酸铁锂电芯	LF280K电芯型式试验报告-GB/T 36276-2018《电力储能用锂离子电池》(2022)
2	LF280K方形磷酸铁锂电芯	LF280K电芯型式试验报告-GB/T 31484-2015《电动汽车用动力蓄电池循环寿命要求及试验方法》(2022)
3	LF280K方形磷酸铁锂电芯	LF280K电芯型式试验报告-GB/T 38031-2020《电动汽车用动力蓄电池安全要求》(2022)
4	LF280K方形磷酸铁锂电芯	LF280K电芯型式试验报告-GB/T 38032-2020《电动客车安全要求》(2022)
15	LF280K V3方形磷酸铁锂电芯	LF280K V3电芯RoHS、REACH、电池指令测试报告(2023)
16	LF280K V3方形磷酸铁锂电芯	LF280K V3电芯UN38.3检测报告(2023)
17	LF280K V3方形磷酸铁锂电芯	LF280K V3电芯危特报告（2023）

- **电芯认证证书**

序号	所属部件	证书名称
1	LF280K方形磷酸铁锂电芯	LF280K -GB/T 36276 储能产品性能等级评价证书(2022)
2	LF280K方形磷酸铁锂电芯	LF280K电芯TUV(IEC 62619)认证证书(2022)
3	LF280K方形磷酸铁锂电芯	LF280K电芯UL1642认证证书(2021)
4	LF280K方形磷酸铁锂电芯	LF280K电芯UL1973认证证书(2021)
5	LF280K方形磷酸铁锂电芯	LF280K电芯CCS认证证书(2022)
6	LF280K方形磷酸铁锂电芯	LF280K电芯海运认证证书(2023)
7	LF280K方形磷酸铁锂电芯	LF280K电芯空运认证证书(2023)
8	LF280K方形磷酸铁锂电芯	LF280K电芯MSDS认证证书(2022)
9	LF280K V3方形磷酸铁锂电芯	LF280KV3电芯海运认证证书(2023)
10	LF280K V3方形磷酸铁锂电芯	LF280KV3电芯空运认证证书(2023)
11	LF280K V3方形磷酸铁锂电芯	LF280KV3电芯MSDS认证证书(2023)

（一）LF280K电芯型式试验报告-GB/T 36276

检 测 报 告

CEPRI-SY8-2020-109

样品名称： 方形铝壳磷酸铁锂电池

样品型号： LF280K

样品规格： Li-Cell-EES 3.2V-448W-448W-896Wh-896Wh

生产单位： 湖北亿纬动力有限公司

委托单位： 湖北亿纬动力有限公司

检测类别： 型式试验

中国电力科学研究院有限公司

2022 年 02 月 11 日

检 测 报 告

样品名称	方形铝壳磷酸铁锂电池	样品型号	LF280K
样品规格	Li-Cell-EES 3.2V-448W-448W-896Wh-896Wh		
委托单位	湖北亿纬动力有限公司	检测类别	型式试验
生产单位	湖北亿纬动力有限公司	生产日期	
到样日期	2020 年 12 月 07 日	样品数量	28
来样方式	送样	检测日期	2020 年 12 月 11 日至 2022 年 01 月 26 日
样品编号	SY8-20/12/07-001~028	检测地点	北京市昌平区南邵镇南中路 16 号
检测项目	见检测项目及检测结论		
检测依据	GB/T 36276-2018《电力储能用锂离子电池》		
检测结论	受湖北亿纬动力有限公司委托，对该单位提供的方形铝壳磷酸铁锂电池样品，按照 GB/T 36276-2018《电力储能用锂离子电池》进行型式试验，共 19 项，其中 19 项满足标准要求，0 项不满足标准要求，型式试验合格。 检测机构盖章 批准人：　官亦标　　签发日期：2022 年 02 月 11 日		
备注	试验参数依据检测委托协议书 CEPRI-SY8-2020-109。		

审核：傅凯　　主检：樊义兴　沈进冉　　编制：郭翠静

检测项目及检测结果

序号	检测项目	页码	样品编号	检测结果
1	外观检验	6～7	SY8-20/12/07-001~028	满足标准要求
2	极性检测	8～9	SY8-20/12/07-001~028	满足标准要求
3	外形尺寸和质量测量	10～11	SY8-20/12/07-001~028	满足标准要求
4	初始充放电能量试验	12～20	SY8-20/12/07-001~028	满足标准要求
5	倍率充放电性能试验	21～23	SY8-20/12/07-001~002	满足标准要求
6	高温充放电性能试验	24	SY8-20/12/07-001~002	满足标准要求
7	低温充放电性能试验	25	SY8-20/12/07-001~002	满足标准要求
8	绝热温升试验	26～27	SY8-20/12/07-003~004	满足标准要求
9	能量保持与能量恢复能力试验	28～29	SY8-20/12/07-005~008	满足标准要求
10	储存性能试验	30	SY8-20/12/07-009~010	满足标准要求
11	循环性能试验（能量型）	31～33	SY8-20/12/07-011~012	满足标准要求
12	过充电试验	34	SY8-20/12/07-013~014	满足标准要求
13	过放电试验	35	SY8-20/12/07-015~016	满足标准要求
14	短路试验	36	SY8-20/12/07-017~018	满足标准要求
15	挤压试验	37	SY8-20/12/07-019~020	满足标准要求
16	跌落试验	38	SY8-20/12/07-021~022	满足标准要求
17	低气压试验	39	SY8-20/12/07-023~024	满足标准要求
18	加热试验	40	SY8-20/12/07-025~026	满足标准要求
19	热失控试验	41～42	SY8-20/12/07-027~028	满足标准要求

主要检测仪器设备

序号	仪器设备名称	规格型号	设备编号	校准有效期
1	数字多用表	17B	SY8-0006	2022.03.14
2	游标卡尺	（0~200）mm	SY8-0003	2022.03.14
3	电子天平	BS-30KA	SY8-0004	2022.03.18
4	钢直尺	（0~1000）mm	SY8-0005	2022.03.19
5	迪卡龙电池测试系统	MCT100-05-8 ME	SY8-0090	2022.03.14
6	伟思气候试验箱	C4-340 Pro	SY8-0091	2022.03.14
7	伟思气候试验箱	C4-340 Pro	SY8-0087	2022.03.14
8	迪卡龙电池测试系统	MCT100-05-8 ME	SY8-0065	2022.03.14
9	伟思气候试验箱	C7-340 Pro	SY8-0102	2022.03.14
10	必测电池测试系统	FTV4-300/50-100	SY8-0026	2022.03.14
11	巨孚恒温恒湿试验机	ETH-8000-40-CP-AR	SY8-0020	2022.03.15
12	迪卡龙电池测试系统	MCT100-05-8 MES	SY8-0066	2022.03.14
13	巨孚低温试验机	ECT-225-20-cp-SD	SY8-0080	2022.03.15
14	大电流短路试验机	BE16000A	SY8-0104	2022.05.24
15	万能材料试验机（电池挤压针刺一体试验机）	BE-6047-100T	SY8-0105	2022.05.24
16	低气压试验箱	BE-8203	SY8-0106	2022.05.24
17	伟思气候试验箱	C4-340 Pro	SY8-0001	2022.03.14
18	数据采集仪	LR8401-21	SY8-1048	2022.03.15
19	绝热温升试验机	THTARC-EV+	SY8-1032	2022.03.15

一、样品基本信息

表 1 电力储能用锂离子电池单体技术规格数据记录表

电池单体规格	Li-Cell-EES 3.2V-448W-448W-896Wh-896Wh		
项目	符号	单位	数值
额定充电小时率	n	/	2
额定放电小时率	n'	/	2
n 小时率额定充电功率	P_{rcn}	W	448
n'小时率额定放电功率	$P_{rdn'}$	W	448
n 小时率额定充电能量	E_{rcn}	Wh	896
n'小时率额定放电能量	$E_{rdn'}$	Wh	896
n 小时率额定充电容量	C_{rcn}	Ah	280
n'小时率额定放电容量	$C_{rdn'}$	Ah	280
电池单体标称电压	/	V	3.2
电池单体尺寸（长×宽×高）	/	mm	(72.0±1.0)×(174.0±1.0)×(207.0±1.0)
电池单体质量	/	kg	5.44±0.2
电池单体充电终止电压	/	V	3.65
电池单体放电终止电压	/	V	2.5
电池单体充电告警电压	/	V	3.7
电池单体放电告警电压	/	V	2.3
电池单体充电保护电压	/	V	3.8
电池单体放电保护电压	/	V	2.0
电池单体告警温度	/	℃	60
电池单体保护温度	/	℃	65
M 值（功率型电池单体）	/	/	/
最大持续充电电流	/	A	720
最大持续放电电流	/	A	720
注：n、n'应从下列数值中选取：8、4、2、1、0.5、0.25，M值为整数且$M\geq 2$。			

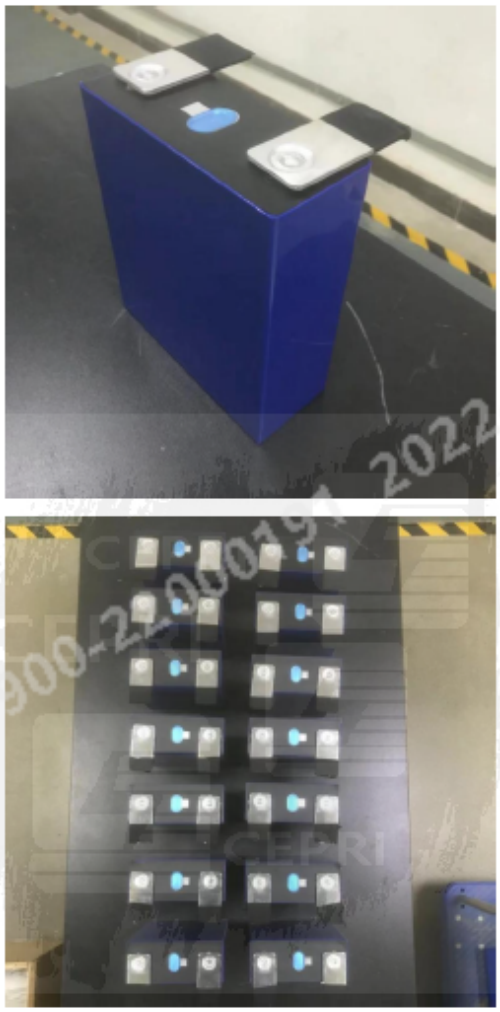
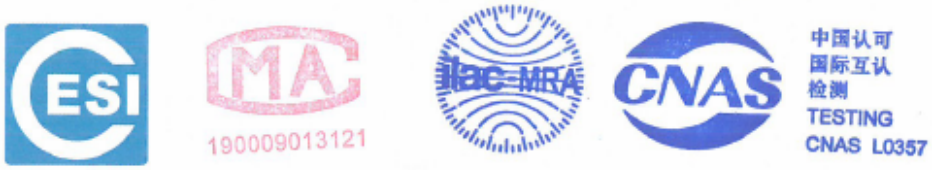


图 1 方形铝壳磷酸铁锂电池样品照片

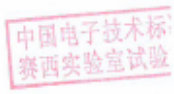
（二）LF280K电芯型式试验报告-GB/T 31484



检 测 报 告

Test Report

报告编号（Report No.）：S22-B0189



产 品 名 称
(Product Name): 方形铝壳电池

型 号
(Model / Type): LF280K

委 托 方
(Client): 湖北亿纬动力有限公司

中国电子技术标准化研究院赛西实验室

China Electronics Standardization Institute CESI Laboratory

检 测 报 告

报告编号：S22-B0189　　第 1 页 共 5 页

产品名称	方形铝壳电池	委 托 方	湖北亿纬动力有限公司
型号规格	LF280K	委托方地址	湖北省荆门市掇刀区荆南大道68号
样品数量	2	制 造 商	湖北亿纬动力有限公司
样品来源	送样	制造商地址	湖北省荆门市掇刀区荆南大道68号
收样日期	2022.02.24	生 产 厂	湖北亿纬动力有限公司
试验类别	委托试验	生产厂地址	湖北省荆门市掇刀区荆南大道68号
检验日期	开始时间：2022.02.25		结束时间：2022.05.19
试验环境	温度：（21.5～24.5）℃； 湿度：（22～46）%R.H.； 大气压力：101kPa		
试验标准/方法	GB/T 31484-2015《电动汽车用动力蓄电池循环寿命要求及试验方法》		
试验概况与分析	根据委托方要求，按 GB/T 31484-2015 进行第 6.2 条～第 6.4 条的试验。		
试验结论	符合委托方要求		
试 验	安洋兆　日期：2022.5.20		中国电子技术标准化研究院赛西实验室（签章）
审 核	日期：2022.5.20		
批 准	日期：2022.5.20		
	王莹：技术负责人 郭建宇：质量负责人 何鹏林：副主任		

注：判定栏中“P”表示合格，“N”表示不适用或未进行，“F”表示不合格，“—”表示不做判定。

样 品 描 述 及 说 明

1. 样品名称：方形铝壳电池；

   型号：LF280K；

   额定电压：3.2V；

   额定容量：280Ah。

2. 试验项目及样品分配：

序号	标准条款号	测试项目	样品编号
1-1	6.2	室温容量和能量	$1^{\#}$~$2^{\#}$
1-2	6.3	室温功率	
1-3	6.4	标准循环寿命	

试验仪器设备清单

序号	名 称	型 号	编 号	校准有效期至	本次使用（✓）
1.	高低温湿热试验箱	EBS-SDJ605F	S537	2023.03.01	✓
2.	电池测试仪	HRCDS-5V500A-T	S759	2022.09.17	✓

（三）LF280K电芯型式试验报告-GB/T 38031

编号：QE22E11D10031

检　验　报　告

车载能源

产品名称：方形铝壳锂离子电池

产品型号：LF280K

受检单位：湖北亿纬动力有限公司

检验类别：强制性检验

招商局检测车辆技术研究院有限公司

国家客车质量检验检测中心

检验报告

样品名称	方形铝壳锂离子电池	商　标	——
型号规格	LF280K	检验类别	强制性检验
受检单位	湖北亿纬动力有限公司	生产单位	湖北亿纬动力有限公司
送 样 者	陈康	送样日期	2022 年 1 月 4 日
样品数量	单体电池：12 只（01～12）	生产日期	2021 年 12 月
检验依据	GB 38031-2020《电动汽车用动力蓄电池安全要求》	检验项目	预处理，过放电，过充电，外部短路，加热，温度循环，挤压
检验结论	经检验，该样品所检验项目的检验结果符合 GB 38031-2020《电动汽车用动力蓄电池安全要求》的要求。 签发日期：2022 年 1 月 19 日		
备　注	——		

批准：凌泽　　审核：田桐军　　主检：何珍珍

检 验 报 告

一、 检验结果

序号	检验项目	标准要求	样品编号	检验结果	符合性判定
1	预处理	预处理在室温下进行，其步骤如下： a) 按照要求对电池单体进行标准充电； b) 静置 30 分钟或制造商规定的时间； c) 以制造商规定的且不小于 $1I_3$ 的电流放电至制造商规定的放电截止条件； d) 静置 30 min 或制造商规定的时间； e) 重复步骤 a）~d）5 次。 如果电池单体连续 2 次的放电容量变化不高于额定容量的 3%,则认为电池单体完成了预处理。	01-12	全部测试对象具体预处理数据参见“附录 B 样品预处理结果”。	符合
2	过放电	电池单体完全充电后，以 $1I_3$(A)电流放电 90min，试验后观察 1h。 要求：电池单体应不起火、不爆炸。	01	未起火、未爆炸。	符合
			02	未起火、未爆炸。	
3	过充电	电池单体完全充电后，以制造商规定且不小于 $1I_3$ 的电流恒流充电至制造商规定的充电终止电压的 1.1 倍或 115%SOC 后，停止充电，试验后观察 1h。 要求：电池单体应不起火、不爆炸。	03	未起火、未爆炸。	符合
			04	未起火、未爆炸。	
4	外部短路	电池单体完全充电后，将电池单体正、负极经外部短路 10min，外部线路电阻应小于 5mΩ，试验后观察 1h。 要求：电池单体应不起火、不爆炸。	05	未起火、未爆炸。	符合
			06	未起火、未爆炸。	
5	加热	电池单体完全充电后，用以下条件加热： a)锂离子电池单体：温度箱按照 5℃/min 的速率由试验室环境温度升至 130℃±2℃，并保持此温度 30min 后停止加热，观察 1h。 b)镍氢电池单体：温度箱按照 5℃/min 的速率由试验室环境温度升至 85℃±2℃，并保持此温度 2h 后停止加热，试验后观察 1h。 要求：电池单体应不起火、不爆炸。	07	未起火、未爆炸。	符合
			08	未起火、未爆炸。	

（续前表）

序号	检验项目	标准要求	样品编号	检验结果	符合性判定
6	温度循环	电池单体完全充电后，放入温度箱中，温度箱温度在-40℃～85℃之间进行调节，循环次数 5 次，试验后观察 1h。 要求：电池单体应不起火、不爆炸。	09	未起火、未爆炸。	符合
			10	未起火、未爆炸。	
7	挤压	a)挤压方向：垂直于电池单体极板方向施压，或与电池单体在整车布局上最容易受到挤压的方向相同； b) 挤压板形式：半径 75 mm 的半圆柱体，半圆柱体的长度（L） 大于被挤压电池单体的尺寸； c)挤压速度：不大于 2mm/s； d)挤压程度：电压达到 0 V 或变形量达到 15%或挤压力达到 100kN 或 1000 倍试验对象重量后停止挤压； e)保持 10min； f)试验后观察 1h。 要求：电池单体应不起火、不爆炸。	11	未起火、未爆炸。	符合
			12	未起火、未爆炸。	

二、 检验时间及地点

检验于 2022 年 1 月 4 日至 2022 年 1 月 13 日在招商局检测车辆技术研究院有限公司进行。

附录 A 样品情况

A1 样品描述

	项目名称	项目参数
基本信息	正极材料	磷酸铁锂
	负极材料	石墨
	产品类型	☑能量型 □功率型 □能量兼功率型
单体信息	额定容量（Ah）	280
	额定电压（V）	3.2
	外形尺寸（mm）	（72.0±1.0）×（174.0±1.0）×（207.0±1.0）（厚×宽×高）
	质量（kg）	5.44 ± 0.30
	充电终止电压（V）	3.65
	放电终止电压（V）	2.5
备注	充电方法：单体：$1I_1$ 恒流充电至单体电池电压 3.65V，转 3.65V 恒压充电至截止电流 $0.05I_1$。	

（四）LF280K电芯型式试验报告-GB/T 38032

编号：QE22EJ1D10041

检　验　报　告

产品名称：	方形铝壳锂离子电池
产品型号：	LF280K
受检单位：	湖北亿纬动力有限公司
检验类别：	强制性检验

招商局检测车辆技术研究院有限公司
国家客车质量检验检测中心

招商局检测车辆技术研究院有限公司

报告编号：QE22EJ1D10041

检 验 报 告

共 4 页　　第 1 页

产品名称	方形铝壳锂离子电池	商　标	——
型号规格	LF280K	检验类别	强制性检验
受检单位	湖北亿纬动力有限公司	生产单位	湖北亿纬动力有限公司
送 样 者	陈康	送样日期	2022 年 1 月 4 日
样品数量	蓄电池系统最小管理单元：1 只（01）	生产日期	2021 年 12 月
检验依据	GB 38032-2020《电动客车安全要求》	检验项目	热失控试验
检验结论	经检验，该样品所检项目符合 GB 38032-2020《电动客车安全要求》中有关条款的要求。 签发日期：2022 年 1 月 19 日		
备　注			

批准：凌泽　　审核：田栩军　　主检：何诗诗

附录 A 检验结果

序号	检验项目	标准要求	检验结果	符合性判定
1	热失控试验	蓄电池系统最小管理单元按照附录 A 规定的试验方法进行热失控试验,试验对象应不起火、不爆炸。	发生热失控的条件： ☑试验对象产生电压降,且下降值超过初始电压的 25%； ☑监测点温度达到电池厂商规定的最高工作温度； □监测点的温升速率 dT/dt>1℃/s,且持续 3s 以上。 加热过程及加热结束 1h 内，试验对象未发生起火、爆炸。	符合

附录 B 检验时间及地点

检验于 2022 年 1 月 4 日至 2022 年 1 月 13 日在招商局检测车辆技术研究院有限公司进行。

附录 C 样品情况表

项目名称			项目参数
单体蓄电池	1	产品型号	LF280K
	2	产品材料体系	正极：磷酸铁锂；负极：石墨
	3	额定电压（V）	3.2
	4	额定容量（Ah）	280
	5	尺寸（mm）	（72.0±1.0）×（174.0±1.0）×（207.0±1.0）（厚×宽×高）
	6	重量（kg）	5.44±0.30
	7	生产厂家	湖北亿纬动力有限公司
最小模块单元	1	产品型号	LF280K
	2	产品组合形式	1 并 1 串
	3	生产厂家	湖北亿纬动力有限公司
电池管理系统	1	产品型号	——
	2	软件版本号	——
	3	额定输入电压（V）	——
	4	额定输入电流（A）	——
	5	CAN 通讯波特率（K）	——
	6	整车安装位置	——
	7	热事故报警信号	——
	8	尺寸（mm）	——
	9	重量（kg）	——
	10	生产厂家	——
蓄电池系统	1	产品型号	——
	2	产品类型	——
	3	产品应用车型	——
	4	整车安装位置	——
	5	整车装备重量（t）	——
	6	产品组合形式	——
	7	冷却方式	——
	8	额定电压（V）	——
	9	额定容量（Ah）	——
	10	额定能量（Wh）	——
	11	系统充电终止电压（V）	——
	12	系统放电终止电压（V）	——
	13	单体充电保护电压（V）	——
	14	单体放电保护电压（V）	——
	15	充电工作温度范围（℃）	——
	16	放电工作温度范围（℃）	——
	17	最大允许持续充电电流	——
	18	最大允许持续放电电流	——
	19	尺寸（mm）	——
	20	重量（kg）	——
	21	生产厂家	——
备注		——	

（五）LF280K电芯IEC 62619(莱茵)测试报告

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT
IEC 62619
Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications

Report Number	CN21LSPD 001
Date of issue	2021-04-01
Total number of pages	18 pages
Name of Testing Laboratory preparing the Report	TÜV Rheinland (Shenzhen) Co., Ltd. 1F East & 3F West -4F, Cybio Technology Building No.1, No.16 Kejibei 2nd Road, High-Tech Industrial Park North Nanshan District, 518057, Shenzhen, China
Applicant's name	EVE POWER Co., Ltd.
Address	No.68, Jingnan Avenue, Jingmen Hi-tech Zone, Jingmen City, Hubei, P.R. China
Test specification:	
Standard	IEC 62619: 2017
Test procedure	CB Scheme
Non-standard test method	N/A
Test Report Form No.	IEC62619A
Test Report Form(s) Originator	UL(Demko)
Master TRF	Dated 2018-06-07

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description	:	Rechargeable lithium ion Cell	
Trade Mark	:	N/A	
Manufacturer	:	Same as applicant	
Model/Type reference	:	LF280K	
Ratings	:	3.2 V, 280 Ah	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	TÜV Rheinland (Shenzhen) Co., Ltd.	
Testing location/ address	:	1F East & 3F West -4F, Cybio Technology Building No.1, No.16 Kejibei 2nd Road, High-Tech Industrial Park North Nanshan District, 518057, Shenzhen, China	
Tested by (name, function, signature)	:	Aiden Dong / PE	Aiden Dong
Approved by (name, function, signature)	:	Corney Zhang / Reviewer	Corney
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address	:		
Tested by (name, function, signature)	:		
Approved by (name, function, signature)	:		
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address	:		
Tested by (name + signature)	:		
Witnessed by (name, function, signature)	:		
Approved by (name, function, signature)	:		
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address	:		
Tested by (name, function, signature)	:		
Witnessed by (name, function, signature)	:		
Approved by (name, function, signature)	:		
Supervised by (name, function, signature)	:		

List of Attachments (including a total number of pages in each attachment): Attachment 1: Photo documentation (3 pages).	
Summary of testing:	
Tests performed (name of test and test clause): cl.7.2.1 External short circuit test (cell); cl.7.2.2 Impact test (cell); cl.7.2.3.2 Whole drop test (cell); cl.7.2.4 Thermal abuse (cell); cl.7.2.5 Overcharging (cell); cl.7.2.6 Forced discharge (cell); cl.7.3.2 Internal short-circuit test (cell); The samples comply with the requirement of IEC 62619: 2017.	**Testing location:** **TÜV Rheinland (Shenzhen) Co., Ltd.** 1F East & 3F West -4F, Cybio Technology Building No.1, No.16 Kejibei 2nd Road, High-Tech Industrial Park North Nanshan District, 518057, Shenzhen, China
Summary of compliance with National Differences (List of countries addressed): No EU Group differences ☒ **The product fulfils the requirement of EN 62619:2017**	

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks

\+ -

Rechargeable Li-ion Cell
Model name:LF280K
3.2V, 280Ah, 896Wh
Standard charge current: 140A
Max. charge voltage: 3.65V
IFpP73/174/208/M/-10+50/90
Date:xxxxxx
EVE POWER Co., Ltd

Caution:
Prohibition short circuit
Don't reverse the positive and negative terminals
Don't discard the cell in fire or heater
Don't directly solder the cell
Don't pierce the cell with a nail or other sharp object
Never disassemble the cell

Remark: The model name and manufacturing traceability shall be marked on the battery surface. The other items listed above can be marked on the smallest package or supplied with the cell.

Test item particulars:	
Classification of installation and use:	To be defined in final product
Supply Connection:	Not directly connected to mains
:	
Possible test case verdicts:	
- test case does not apply to the test object:	N/A
- test object does meet the requirement:	P (Pass)
- test object does not meet the requirement:	F (Fail)
Testing:	
Date of receipt of test item:	2021-02-23
Date (s) of performance of tests:	2021-02-23 to 2021-03-12

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided:	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies): Same as applicant

General product information and other remarks:

The main features of the cell are shown as below:

Product name	Rechargeable Lithium Ion Cell
Model	LF280K
Capacity	280Ah
Nominal voltage	3.2V
Nominal charge current	140A

Maximum continuous charge current	280A
Nominal discharge current	140A
Maximum continuous discharge current	280A
Maximum charge voltage	3.65 V
Upper charge temperature	+55 °C
Lower charge temperature	0 °C
Upper discharge temperature	+55 °C
Lower discharge temperature	-20 °C
Storage temperature range	1 month: -20~45°C 1 year: 0~35°C
Recommend charging method declared by the manufacturer	At constant current 0.5 C till cell voltage reaches 3.65 V, then switch to constant voltage 3.65 V till charge current drops to 0.05 C.
Charging procedure for internal short-circuit test	At constant current 0.5 C till cell voltage reaches 3.65 V, then switch to constant voltage 3.65 V till charge current drops to 0.05C.
Recommend discharging method declared by the manufacturer	Discharging the cell with 0.5 C constant current to discharge cut-off voltage 2.50 V
Nominal mass (kg)	5.42±0.3 kg
External dimensions (mm)	Thickness: 72±0.5mm High: 207.5±0.5 mm Width: 173.7±0.5 mm

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
4	**PARAMETER MEASUREMENT TOLERANCES**		**P**
	Parameter measurement tolerances		P
5	**GENERAL SAFETY CONSIDERATIONS**		**P**
5.1	**General**		**P**
	Cells and batteries are safe under conditions of both intended use and reasonably foreseeable misuse. :	See also table 5.1 for Critical components information	P
5.2	**Insulation and wiring**		**N/A**
	Voltage, current, altitude, and humidity requirements		N/A
	Adequate clearances and creepage distances between connectors		N/A
	The mechanical integrity of internal connections		N/A
5.3	**Venting**		**P**
	Pressure relief function	Vent design in cell.	P
	Encapsulation used to support cells within an outer casing		N/A
5.4	**Temperature/voltage/current management**		**N/A**
	The design prevents abnormal temperature-rise	Cell only	N/A
	Voltage, current, and temperature limits of the cells		N/A
	Specifications and charging instructions for equipment manufacturers		N/A
5.5	**Terminal contacts of the battery pack and/or battery system**		**N/A**
	Polarity marking(s)	Cell only	N/A
	Capability to carry the maximum anticipated current		N/A
	External terminal contact surfaces		N/A
	Terminal contacts are arranged to minimize the risk of short circuits		N/A
5.6	**Assembly of cells, modules, or battery packs into battery systems**		N/A
5.6.1	General	Cell only	N/A
	Independent control and protection method(s)		N/A
	Recommendations of cell operating limits by the cell manufacturer		N/A
	Batteries designed for the selective discharge of a portion of their series connected cells		N/A
	Protective circuit component(s) and consideration to the end-device application		N/A
5.6.2	Battery system design	Cell only	N/A
	The voltage control function		N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	The voltage control for series-connected batteries		N/A
5.7	**Operating region of lithium cells and battery systems for safe use**		**P**
	The cell operating region ..... :		P
	Designation of battery system to comply with the cell operating region	See page 6 for cell operating region.	P
5.8	**Quality plan**		**P**
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented..... :	IATF 16949 certification provided.	P
	The process capabilities and the process controls		P

6	**TYPE TEST CONDITIONS**		**P**
6.1	**General**		**P**
6.2	**Test items**		**P**
	Cells or batteries that are not more than six months old (See Table 1 of IEC62619)		P
	Capacity confirmation of the cells or batteries		P
	Default ambient temperature of test, 25 °C ± 5 °C	Tests were carried out in an ambient temperature of 25±5°C.	P

7	**SPECIFIC REQUIREMENTS AND TESTS**		**P**
7.1	**Charging procedure for test purposes**		**P**
	The battery discharged to a specified final voltage prior to charging		P
	The cells or batteries charged using the method specified by the manufacturer..... :	The method mentioned in manufacturer's specifications.	P
7.2	**Reasonably foreseeable misuse**		**P**
7.2.1	External short-circuit test (cell or cell block)		P
	Short circuit with total resistance of 30 mΩ ± 10 mΩ at 25 °C ± 5 °C		P
	Results: no fire, no explosion	See Table 7.2.1.	P
7.2.2	Impact test (cell or cell block)		P
	Cylindrical cell, longitudinal axis impact		N/A
	Prismatic cell, longitudinal axis and lateral axis impact	Prismatic cell	P
	Results: no fire, no explosion.		P
7.2.3	Drop test (cell or cell block, and battery system)		P
7.2.3.1	General		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
7.2.3.2	Whole drop test (cell or cell block, and battery system)		P
	Description of the Test Unit..... :	Cell	—
	Mass of the test unit (kg)..... :	5.46 kg	—
	Height of drop (m)..... :	1.0	—
	Results: no fire, no explosion		P
7.2.3.3	Edge and corner drop test (cell or cell block, and battery system)	The mass of cell is less than 20 kg	N/A
	Description of the Test Unit..... :		—
	Mass of the test unit (kg)..... :		—
	Height of drop (m)..... :		—
	Results: no fire, no explosion		N/A
7.2.4	Thermal abuse test (cell or cell block)		P
	Results: no fire, no explosion		P
7.2.5	Overcharge test (cell or cell block)		P
	For those battery systems that are provided with only a single protection for the charging voltage control	Cell only	—
	Results: no fire, no explosion..... :	See Table 7.2.5.	P
7.2.6	Forced discharge test (cell or cell block)		P
	Upper limit charge voltage of the cell..... :	3.65 V	P
	Cells connected in series in the battery system.... :		N/A
	Redundant or single protection for discharge voltage control provided in battery system..... :		N/A
	Target Voltage..... :	-3.65 V applied.	—
	Maximum discharge current of the cell, I_m..... :	280 A	—
	Discharge current for forced discharge, 1.0 It..... :	280 A	—
	Discharging time, t = (1 It / I_m) x 90 (min.)..... :	90min	—
	Results: no fire, no explosion..... :	See Table 7.2.6.	P
7.3	**Considerations for internal short-circuit – Design evaluation**		**P**
7.3.1	General		P
7.3.2	Internal short-circuit test (cell)		P
	Samples preparation procedure: a), in accordance with 8.3.9 of IEC62133:2012; or b), the nickel particle inserted before charging, or c), the nickel particle was inserted before electrolyte filling..... :	Test accordance with 8.3.9 of IEC 62133: 2012.	P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Tested according to Cl. 8.3.9 of IEC 62133:2012 test method, except all tests were carried out in an ambient temperature of 25 °C ± 5 °C.		P
	The appearance of the short-circuit location recorded by photograph or other means ..... :	See Attachment 1: Photo documentation	—
	The pressing was stopped - When a voltage drop of 50 mV was detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) was reached	400N	P
	Results: no fire, no explosion..... :	See Table 7.3.2.	P
7.3.3	**Propagation test (battery system)**	7.3.2 was selected.	N/A
	Method to create a thermal runaway in one cell ... :		N/A
	Results: No external fire from the battery system or no battery case rupture ..... :		N/A

8	**BATTERY SYSTEM SAFETY (CONSIDERING FUNCTIONAL SAFETY)**		**N/A**
8.1	**General requirements**	**Cell only**	**N/A**
	Functional safety analysis for critical controls		N/A
	Conduct of a process hazard, risk assessment and mitigation of the battery system		N/A
8.2	**Battery management system (or battery management unit)**		**N/A**
8.2.1	Requirements for the BMS	Cell only	N/A
	The safety integrity level (SIL) target of the BMS		N/A
	The charge control evaluated by tests in clauses 8.2.2 to 8.2.4		N/A
8.2.2	Overcharge control of voltage (battery system)	Cell only	N/A
	The exceeded charging voltage applied to the whole battery system		N/A
	The exceeded charging voltage applied to only a part of the battery system, such as the cell(s)..... :		N/A
	Results: no fire, no explosion..... :		N/A
	The BMS interrupted the overcharging before reaching 110% of the upper limit charging voltage		N/A
8.2.3	Overcharge control of current (battery system)	Cell only	N/A
	Results: no fire, no explosion..... :		N/A
	The BMS detected the overcharging current and controlled the charging to a level below the maximum charging current		N/A
8.2.4	Overheating control (battery system)	Cell only	N/A
	The cooling system, if provided, was disconnected		N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Elevated temperature for charging, 5 °C above maximum operating temperature..... :		N/A
	Results: no fire, no explosion..... :		N/A
	The BMS detected the overheat temperature and terminated charging		N/A
	The battery system operated as designed during test		N/A
9	**INFORMATION FOR SAFETY**		**P**
	The cell manufacturer provides information about current, voltage and temperature limits of their products		P
	The battery system manufacturer provides information regarding how to mitigate hazards to equipment manufacturers or end-users.		N/A
10	**MARKING AND DESIGNATION (REFER TO CLAUSE 5 OF IEC 62620)**		**P**
	The marking items shown in Table 1 in IEC 62620 indicated on the cell, battery system or instruction manual.	See page 4	P
	Cell or battery system has clear and durable markings		P
	Cell designation	IFpP73/174/208/M/-10+50/ 90	P
	Battery designation		N/A
	Battery structure formulation		N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX A	OPERATING REGION OF CELLS FOR SAFE USE		P
A.1	General		P
A.2	Charging conditions for safe use		P
A.3	Consideration on charging voltage		P
A.4	Consideration on temperature		P
A.5	High temperature range		P
A.6	Low temperature range		P
A.7	Discharging conditions for safe use		P
A.8	Example of operating region		P

ANNEX B	PROCEDURE OF 7.3.3 PROPAGATION TEST		N/A
B.1	General		N/A
B.2	Test conditions:		N/A
	– The battery fully charged according to the manufacturer recommended conditions.....:		—
	– Target cell forced into thermal runaway.....:		—
	– A specially prepared sample (e.g. a heater or a hole for nail penetration provided) used for ease of testing.....:		—
B.3	Method used for initiating the thermal runaway. 1) Heater (Heater, Burner, Laser, Inductive heating 2) Overcharge 3) Nail penetration of the cell 4) Combination of above methods 5) Other methods.....:		—

ANNEX C	PACKAGING		P
	The materials and pack design chosen in such a way as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		P

Product: Rechargeable lithium ion Cell

Type Designation: LF280K

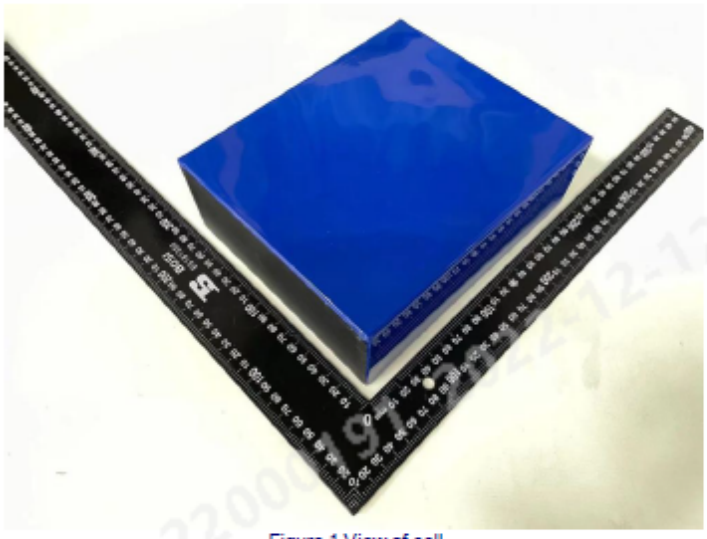


Figure 1 View of cell

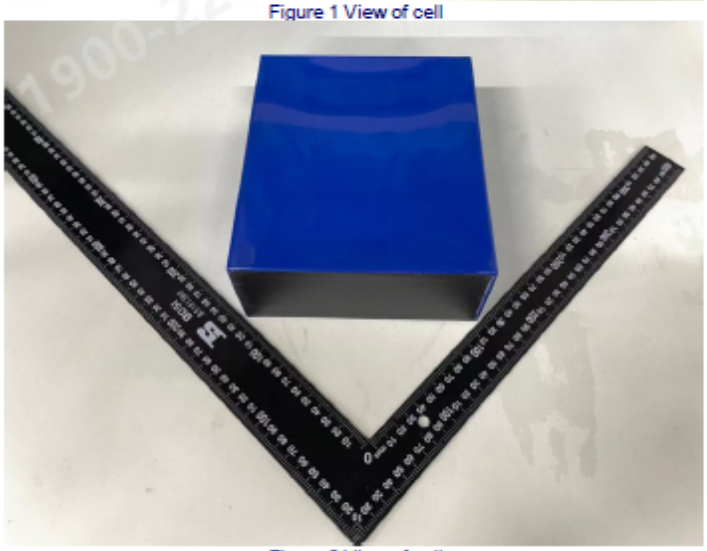


Figure 2 View of cell

Product: Rechargeable lithium ion Cell

Type Designation: LF280K

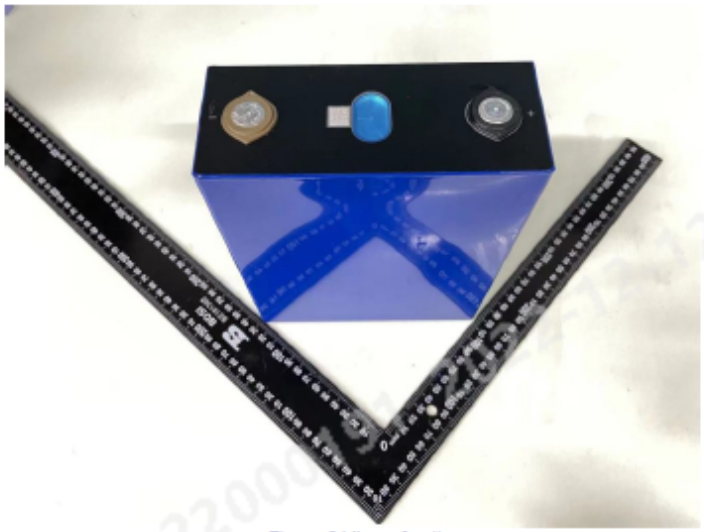


Figure 3 View of cell

Figure 4 View of cell

（六）LF280K电芯IEC 62660-3 (联鼎)测试报告

TEST REPORT

Report No.: PNS220224158 01001 Page 1 of 13

TEST REPORT IEC 62660-3 **Secondary lithium-ion cells for the propulsion of electric road vehicles** **Part 3: Safety requirements**	
Report Number	PNS220224158 01001
Date of issue	2022-03-18
Total number of pages	13
Testing Laboratory	**GUANGDONG UTL CO., LTD.**
Address	Lianding Testing Building, No.18 Center Road of Yayuan Industrial Zone, Nancheng District, Dongguan, Guangdong, China
Tested by (name + signature)	Sophie Wu
Reviewed by (name + signature)	Ivy Bi
Approved by (name + signature)	Andy Huang
Applicant's name	EVE Power Co., Ltd.
Address	No. 68, Jingnan Avenue, Duodao Zone, Jingmen, Hubei, China
Manufacturer's name	EVE Power Co., Ltd.
Address	No. 68, Jingnan Avenue, Duodao Zone, Jingmen, Hubei, China
Factory's name	EVE Power Co., Ltd.
Address	No. 68, Jingnan Avenue, Duodao Zone, Jingmen, Hubei, China
Test specification:	
Standard	IEC 62660-3:2016
Test procedure	N/A
Non-standard test method	N/A
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Test item description	Lithium-ion Power Cell
Trade Mark	EVE
Model/Type reference	LF280K
Ratings	3.2V, 280Ah

List of Attachments (including a total number of pages in each attachment):
- Photos documentation (1 page)

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
cl. 5.2 Capacity cl. 6.2.1 Vibration cl. 6.2.2 Mechanical shock cl. 6.2.3 Crush cl. 6.3.1 High temperature endurance cl. 6.3.2 Temperature cycling cl. 6.4.1 External short circuit cl. 6.4.2 Overcharge cl. 6.4.3 Forced discharge cl. 6.4.4 Internal short circuit test	**GUANGDONG UTL CO., LTD.** Lianding Testing Building, No.18 Center Road of Yayuan Industrial Zone, Nancheng District, Dongguan, Guangdong, China

Summary of compliance with National Differences (List of countries addressed):

N/A

☒ The product fulfils the requirements of EN 62660-3:2016.

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Note: Cells used in the manufacture of a battery need not be marked.

Test item particulars	:	
Classification of installation and use	:	☒ BEV application ☐ HEV application
Recommend charging voltage	:	3.65V
Recommend charging current	:	140A
Recommend charging method declared by the manufacturer	:	Charging the cell with 140A constant current and 3.65V constant voltage until the current reduces to 14A at ambient 25°C±2°C
Discharge current (1/3 I_t A) for BEV	:	93.333A
Discharge current (1 I_t A) for HEV	:	N/A
Specified end of discharge voltage	:	0°C<T≤65°C: 2.5V; -20°C<T≤0°C: 2.0V
Charging temperature range	:	0~65°C
Possible test case verdicts:		
- test case does not apply to the test object	:	N/A
- test object does meet the requirement	:	P (Pass)
- test object does not meet the requirement	:	F (Fail)
Testing	:	
Date of receipt of test item	:	2022-02-23
Date (s) of performance of tests	:	2022-03-02 to 2022-03-17

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

The test results presented in this report relate only to the object tested.
This report shall not be reproduced except in full without the written approval of the testing laboratory.
Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

General product information:

The cell consists of the positive electrode plate, negative electrode plate, separator, electrolyte and case. The positive and negative electrode plates are housed in the case in the state being separated by the separator.

The main features of the cell are shown as below:

Product name	Lithium ion cell
Model	LF280K
Capacity	280Ah
Nominal voltage	3.2V
Rated charge current	140A
Standard discharge current	140A
Maximum charge current	280A
Maximum discharge current	280A
Rated charge voltage	3.65V
Maximum Charge voltage	3.65V
Final discharge voltage	0°C<T≤65°C: 2.5V; -20°C<T≤0°C: 2.0V
Charging temperature upper limit	0°C ~ 65°C
Discharge temperature range	-20°C ~ 65°C
Weight (g)	5400±300g
External dimensions (mm)	Approx. L 173.7±0.5mm x T 72.0±1.0mm x H 207.2±0.5mm

IEC 62660-3			
Clause	Requirement + Test	Result - Remark	Verdict

4	TEST CONDITIONS		P
4.1	**General**		P
	The details of the instrumentation used have been provided in any report of results		P
4.2	**Measuring instruments**		**P**
4.2.1	Range of measuring devices		P
	The instruments used enable the values of voltage and current measured. The range of these instruments and measuring methods chosen so as to ensure the accuracy specified for each test		P
	For analogue instruments, this implies that the readings taken in the last third of the graduated scale		P
	Any other measuring instruments may be used provided they give an equivalent accuracy		P
4.2.2	Voltage measurement		P
	The resistance of the voltmeters used at least 1 MΩ/V		P
4.2.3	Current measurement		P
	The entire assembly of ammeter, shunt and leads are of an accuracy class of 0,5 or better		P
4.2.4	Temperature measurements		P
	The cell temperature measured by use of a surface temperature measuring device capable of an equivalent scale definition and accuracy of calibration as specified in 4.2.1		P
	The temperature measured at location which most closely reflects the cell temperature		P
	The temperature may be measured at additional appropriate locations, if necessary		P
4.2.5	Other measurements		P
	Other values including capacity and power may be measured by use of a measuring device, provided that it complies with 4.3		P
4.3	**Tolerance**		**P**
	Parameter measurement tolerances		P
4.4	**Test temperature**		**P**
	If not otherwise defined, before each test the cell stabilized at the test temperature for a minimum of 12 h		P

IEC 62660-3			
Clause	Requirement + Test	Result - Remark	Verdict
	This period can be reduced if thermal stabilization is reached. Thermal stabilization is considered reached if after one interval of 1 h, the change of cell temperature is lower than 1 K		P
	Unless otherwise stated in this standard, cells tested at room temperature using the method declared by the manufacturer		P
5	**ELECTRICAL MEASUREMENT**		**P**
5.1	**General charge conditions**		**P**
	Unless otherwise stated in this standard, prior to the electrical measurement test, the cell charged as follows		P
	Prior to charging, the cell discharged at room temperature at a constant current of 1/3 It(A) for BEV application and 1 It(A) for HEV application down to an end-of-discharge voltage specified by the manufacturer. Then, the cell charged according to the charging method declared by the manufacturer at room temperature	BEV application	P
5.2	**Capacity**		P
	Before the SOC adjustment in 5.3, the capacity of the test cell confirmed the rated value in accordance with the following steps. Step 1 – The cell charged in accordance with 5.1 Step 2 – The cell discharged at the room temperature at a constant current of 1/3 It(A) for BEV application and 1 It(A) for HEV application to the end-of-discharge voltage that is provided by the manufacturer Step 3 – Measure the discharge endurance duration until the specified end-of-discharge voltage is reached, and calculate the capacity of cell expressed in Ah up to three significant figures	(See appended table 5.2)	P
5.3	**SOC adjustment**		P
	The test cells charged as specified, and discharged at a constant current of 1/3 It(A) for BEV application and 1 It(A) for HEV application for (100 - n) / 100 x 3 h for BEV application and for (100 - n) / 100 x 1 h for HEV application	BEV application	P
6	**SAFETY TESTS**		
6.1	**General**		**P**

IEC 62660-3			
Clause	Requirement + Test	Result - Remark	Verdict
	The tests performed on cells that are not more than six months old. The number of cells under each test can be determined according to the agreement between the manufacturer and the customer. A cell block may be used for testing in place of a single cell according to the agreement between the manufacturer and the customer. Each test is end with the one-hour observation period, unless otherwise specified in this standard		P
6.2	**Mechanical tests**		P
6.2.1	Vibration		P
	The test performed in accordance with 6.1.1.1 of IEC62660-2:2010		P
	During the test, the cell is exhibit no evidence of leakage, venting, rupture, fire or explosion	(See appended table 6.2.1)	P
6.2.2	Mechanical shock		P
	The test performed in accordance with 6.1.2.1 of IEC62660-2:2010		P
	During the test, the cell is exhibit no evidence of leakage, venting, rupture, fire or explosion	(See appended table 6.2.2)	P
6.2.3	Crush		P
	Adjust the SOC of cell to100 % for BEV application and 80 % for HEV application		P
	The cell placed on an insulated rigid flat supporting surface, and applied a force with a crushing tool made of a solid material in the shape of a round or semicircular bar, or in the shape of a sphere or hemisphere with a 150 mm diameter. It is recommended to use the round bar to crush a cylindrical cell, and the sphere for a prismatic cell, including a flat or pouch cell. The force for the crushing applied in a direction nearly perpendicular to the layered face of the positive and negative electrodes inside cell. The force applied to the approximate centre of cell. The crush speed less than or equal to 6 mm/min		P
	The force released when an abrupt voltage drop of one-third of the original cell voltage occurs, or a deformation of 15 % or more of the initial cell dimension occurs, or a force of 1000 times of the weight of the cell is applied, whichever comes first. The cell under observation for 24 h or until the cell temperature declines 80 % of the maximum temperature rise, whichever is sooner		P
	During the test, the cell is exhibit no evidence of fire or explosion	(See appended table 6.2.3)	P
6.3	**Thermal test**		**P**
6.3.1	High temperature endurance		P

IEC 62660-3			
Clause	Requirement + Test	Result - Remark	Verdict
	Adjust the SOC of cells to 100 % for BEV application or 80 % for HEV application	BEV application	P
	The cell, stabilized at room temperature, placed on a gravity or circulation air convention oven. The oven temperature raised at 5 K/min to 130 ºC ± 2 K. The cell is remain at this temperature for 30 min. Then, after the heater is turned off, the cell observed for 1 h in the oven		P
	During the test, the cell is exhibit no evidence of fire or explosion	(See appended table 6.3.1)	P
6.3.2	Temperature cycling		P
	The test performed in accordance with 6.2.2.1.1 of IEC 62660-2:2010		P
	During the test, the cell is exhibit no evidence of leakage, venting, rupture, fire or explosion	(See appended table 6.3.2)	P
6.4	**Electrical tests**		**P**
6.4.1	External short circuit		P
	The test performed in accordance with 6.3.1.1 of IEC 62660-2:2010		P
	During the test, the cell is exhibit no evidence of fire or explosion	(See appended table 6.4.1)	P
6.4.2	Overcharge		P
	Adjust the SOC of the cell to 100 %		P
	Continue charging the cell beyond 100 % SOC with a charging current of 1 It(A) for BEV application or 5 It(A) for HEV application at room temperature using a power supply sufficient to provide the constant charging current. The overcharge test discontinued when the voltage of cell reaches 120 % of the maximum charging voltage specified by the manufacturer, or the quantity of electricity applied to the cell reaches the equivalent of 130 % SOC, whichever comes first	BEV application	P
	During the test, the cell is exhibit no evidence of fire or explosion	(See appended table 6.4.2)	P
6.4.3	Forced discharge		P
	Adjust the SOC of the cell to 0 %		P
	Continue discharge the cell beyond 0 % SOC at 1 It discharge current at room temperature. The forced discharge test discontinued when the absolute value of the voltage of the cell reaches 25 % or less of the normal voltage specified by the manufacturer, or the cell is discharged for 30 min, whichever is sooner		P
	During the test the cell is exhibit no evidence of leakage, venting, rupture, fire or explosion	(See appended table 6.4.3)	P

IEC 62660-3			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.4	Internal short circuit test		P
	The test performed on the cell in accordance with 7.3.2 b) of IEC 62619 with modification		P
	Alternative test may be selected if the criteria are satisfied and agreed between the customer and the supplier		P
	During the test, the cell is exhibit no evidence of fire or explosion	(See appended table 6.4.4)	P
ANNEX A	**OPERATING REGION OF CELLS FOR SAFE USE**		
A.1	General		P
A.2	Charging conditions for safe use		P
A.2.1	General		P
A.2.2	Consideration on charging voltage		P
A.2.3	Consideration on temperature		P
A.2.3.1	General		P
A.2.3.2	High temperature range		P
A.2.3.3	Low temperature range		P
A.3	Example of operating region		P
ANNEX B	**EXPLANATION FOR THE INTERNAL SHORT-CIRCUIT TEST**		
B.1	General concept		P
B.2	Internal short circuit caused by particle contamination		P

TEST REPORT

Photos

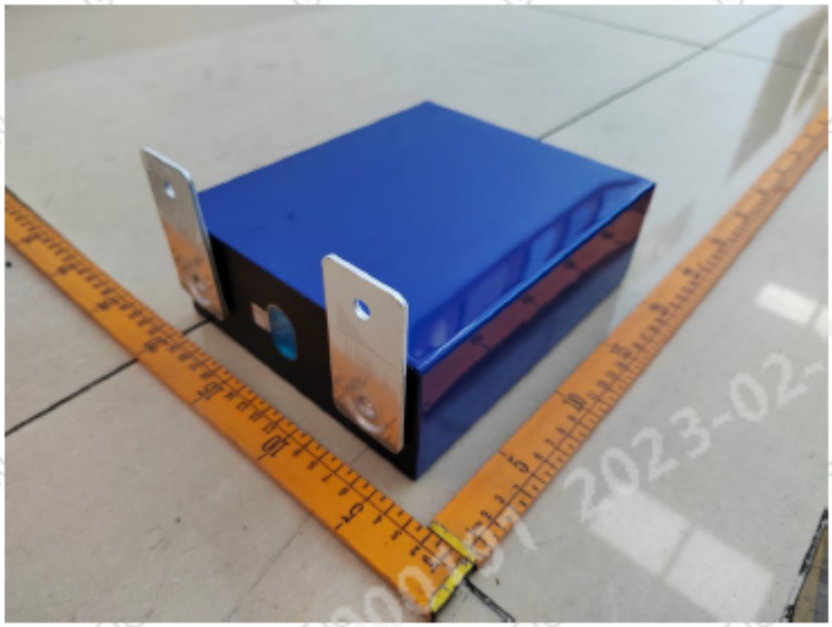

Fig.1 General view I of cell

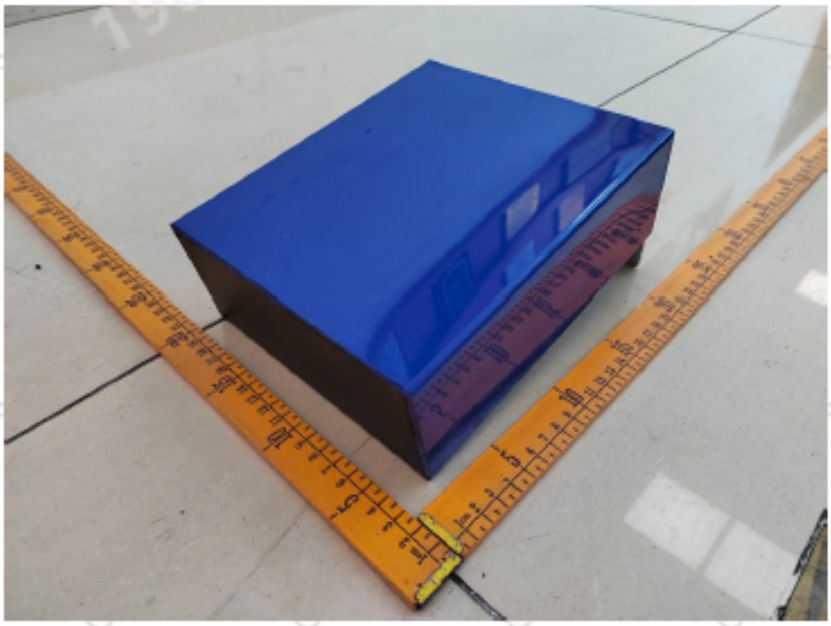

Fig.2 General view II of cell

-- END --

（七）LF280K电芯UL1642测试报告

File MH62190
Project 4790147166

Issued: December 24, 2021

REPORT

on

Component- Lithium Batteries

EVE POWER Co., Ltd.
HUBEI, CHINA

DESCRIPTION

PRODUCT COVERED:

USR Component - Secondary, Lithium-ion prismatic cells as noted below.

Model Number	Chemistry	Shape/Type
LF280K	LiFePO4+6xC⇔Li1-xFePO4+LixC6	Prismatic

ELECTRICAL RATING:

See also Conditions of Acceptability for charge limit specifications.

Model Number	Voltage (Nominal), Vdc	Capacity, (Nominal), Ah
LF280K	3.2	280

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

USR indicates compliance with the requirements outlined in UL 1642, Standard for Lithium Batteries, Sixth Edition, Dated September 29, 2020.

Use - For use only in products where the acceptability of the combination is determined by UL LLC.

Conditions of Acceptability - The use of these cells may be considered generally acceptable under the conditions given below:

1. The cells should be used within their manufacturer's specified temperature ranges as noted in Table below:

Models	Manufacturer Specified Temperature ranges	
LF280K	Charging Temperature Range	0-55 °C
	Discharging Temperature Range	-20-55°C
	Upper Limit Charging Voltage	3.65 Vdc
	Upper charging Temp limit(T3)	55 °C
	Lower charging Temp limit(T2)	0 °C

The end product shall be designed to prevent the high temperature excursions on cell surface from exceeding 100°C (212°F).

2. These cells are to be used only in devices where servicing of the cell circuit and installation and replacement of the lithium-ion cells will be done by a trained technician. These cells are intended to be installed in a protective enclosure in the end use application that prevents access to the cells and associated cell circuitry by the user during charging and discharging of the cells.

3. These cells shall be installed within an enclosure that provides mechanical protection in the end use application, so that they protected from physical abuse that could result in damage to the cells including internal short circuits or shorting of terminals. Enclosures provided in the end use application shall prevent access to the cells through the use of simple tools or through openings.

4. The suitability of these cells for multi cell applications including series or parallel connections shall be determined in the end use. Cells used in multi-cell applications shall be of the same type, ratings and age to prevent the potential for explosions and fire due to cell imbalance.

5. For cells intended for series applications, protection shall be provided in the end use application to prevent cell reversal due to a forced discharge condition. A forced discharge test shall be conducted in the end use application for series connected cell applications.

6. These cells have been subjected to an abnormal charge test which subjects the cells to a constant current (CC) charge method followed by a constant voltage (CV) charge method. The test limit parameters for the abnormal charge test are outlined in the table below. The charging circuit in the end use application shall limit the charging current and charging voltage to the levels noted in the table under both normal and single fault condition. If the charging current and voltage in the end use application cannot be maintained at or below the levels noted in the table or if the charging method is different from the CC/CV method noted above, additional evaluation and testing may be necessary.

Model	Maximum Charging Current (Ic), A	Maximum Charging Voltage (Vc), V dc
LF280K	280	3.65

MARKINGS/INSTRUCTIONS:

The Recognized manufacturer's name, trade name or trademark or other descriptive markings or traceable ID code; Catalog number or model designation or equivalent; and date of manufacturer on the cell.

The cell or smallest package containing the cell shall be marked with the UL Recognition Mark.

The date of manufacture may be in the form of a code. See Ill.8 for details of date code.

See Section General for details of manufacturer's marking for cells manufactured at more than one factory location.

（八）LF280K电芯UL1973测试报告

Commercial Inspection and Testing Services (CITS)

2021-03-31
EVE POWER CO., LTD.
No. 68, Jingnan Avenue, Jingmen Hi-Tec, Jingmen, China
Tel: 15549415811
E-mail: 069228@evebattery.com

Subject: Testing project for Lithium-ion rechargeable pack per ANSI/CAN/UL1973, STANDARD FOR BATTERIES FOR USE IN STATIONARY, VEHICLE AUXILIARY POWER AND LIGHT ELECTRIC RAIL (LER) APPLICATIONS, Edition 2, Issue Date 02/07/2018

Dear Zheng Hui,

Testing work associated with project number 4789803156, file number MH63503 has been completed. Please see the attached data results.

UL LLC (UL) did not select the sample(s), determine whether the sample(s) was representative of production samples, witness the production of the test sample(s), nor were we provided with information relative to the formulation or identification of component materials used in the test sample(s). The test results apply only to the actual samples tested.

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Thank you for the opportunity to provide your company with these services. Please do not hesitate to contact us if you should have any questions or comments.

Very truly yours,

Cecilia Jiang
+86 51268758710
Project Engineer
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Reviewed by:

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Senior Project Engineer
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Attached Testing Reports (Total pages: 5)

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Commercial Inspection and Testing Services (CITS)

Testing Report

Project No.: 4789803156 **File No.:** MH63503

Client Name: EVE POWER CO., LTD.

Test Standard of Requirement:

ANSI/CAN/UL1973, STANDARD FOR BATTERIES FOR USE IN STATIONARY, VEHICLE AUXILIARY POWER AND LIGHT ELECTRIC RAIL (LER) APPLICATIONS, Edition 2, Issue Date 02/07/2018

Test Laboratory/Location:

UL Changzhou Quality Technology Services Co., Ltd
21 Longmen Rd, National High-Tech Industrial Development District, Wujin, Changzhou, JiangsuSu, China

Test Sample Description:

Set#	Sample Description	Model No.	Number of Samples Submitted
1	Lithium-ion rechargeable cell	LF280K	2

Commercial Inspection and Testing Services (CITS)

1.General information:

Model Number	Lithium Chemistry (i.e. Lithium Iron Phosphate, etc.)	Format (i.e. prismatic, cylindrical, pouch)	Standard (i.e. UL 1973, UL 2271,UL 2580)
LF280K	LiFePO4	prismatic	UL 1973

Model Number	Voltage (Nominal), Vdc	Capacity, (Nominal), Ah
LF280K	3.2	280

Cell Model	Mfgs. Recommended Charge Specifications					Mfgs. Recommended Discharge Specifications			
	Voltage, Vdc	Current, A	Maximum Voltage, Vdc	Maximum Current		Current, A	End Point Voltage, Vdc	Maximum Current	
				Continuous charging current, A	Pulse charging current, A			Continuous discharging current, A	Pulse discharging current, A
LF280K	3.65	140	3.65	280	560(t≤30s)	140	2.5	280	560(t≤30s)

Cell Model	Charge, °C		Discharge, °C		Storage, °C		Surface Temperature Limit, °C
	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit	
LF280K	0	55	-20	55	0	35	Charge:0~65 Discharge:0~65

Model No.	Weight ± tolerances(g)
LF280K	5420±300

TESTS TO BE CONDUCTED:			
Test No.	Done	Test Name	[X] Comments/Parameters
–	--	GENERAL	–
1	X	APP E DROP IMPACT TEST:	Complying

（九）LF280K电芯UL9540A测试报告

CELL TEST REPORT
UL 9540A
Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems (AACD)

Project Number. ..... :	**4789795626**
Date of issue ..... :	**2021.04.30, Amendment No.1: 2022.08.29**
Total number of pages ..... :	**39**
UL Report Office ..... :	**UL-CCIC Company Limited Guangzhou Branch**
Applicant's name ..... :	**EVE POWER Co., Ltd.**
Address ..... :	No. 68, Jingnan Avenue, Jingmen Hi-tech Zone Jingmen, CN
Test specification:	4th Edition, Section 7, November 12, 2019
Standard ..... :	UL 9540A, Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems
Test procedure ..... :	7.1 – 7.8
Non-standard test method ..... :	N/A

General disclaimer:

The test results presented in this report relate only to the sample tested in the test configuration noted on the list of the attachments.

UL LLC did not select the sample(s), determine whether the sample(s) was representative of production samples, witness the production of the test sample(s), nor were we provided with information relative to the formulation or identification of component materials used in the test sample(s).

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Cell level information	
Model No ..... :	LF280K
Ratings (Vdc, Ah) ..... :	3.2 Vdc, 280 Ah

Chemistry of test item.....:	Lithium iron phosphate
Original Equipment Manufacturer (OEM):	**EVE POWER Co., Ltd.**
Branding Manufacturer (if not OEM):	N/A
Was the cell certified? .....:	Yes
Standard test item certified to .....:	UL1973
Organization that certified test item .....:	UL (MH63503)

Cell failure test method performed (summary of method and test clause):

☒ External heating using thin film with 4°C to 7°C thermal ramp.

☐ Nail Penetration

☐ Overcharge

☐ External short circuit (***X*** Ω *external resistance*)

☐ Flow Battery with 2 active electrolyte methods

☐ Flow Battery with 1 active electrolyte methods

Others

Description of method used to fail cells if other than external thin film heater with thermal ramp, : N/A

Summary of testing:

Performance Criteria in accordance with Clause 7.7 and Figure 1.1:

[ ] Thermal runaway was not induced in the cell; and

[ ] The cell vent gas did not present a flammability hazard when mixed with any volume of air, as determined in accordance with ASTM E918 at both ambient and vent temperatures.

Necessity for a module level test

[X] The performance criteria of the cell level test as indicated in 7.7 of UL 9540A 4th edition has not been met, therefore a module level testing in accordance with UL 9540A will need to be conducted on a complete module employing this cell.

[ ] The performance criteria of the module level tests as indicated in 7.7 of UL 9540A 4th edition has been met, therefore a module level testing in accordance with UL 9540A need not be conducted.

Testing Laboratory information

Testing Laboratory and testing location(s):

Testing Laboratory:	UL(Changzhou) Quality Technical Service Co,. LTD

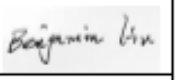
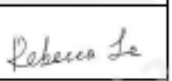
Testing location/ address ..... :	21 Longmen Rd, National High-Tech Industrial Development District, Wujin, Changzhou, Jiangsu, China	
Tested by (name, signature) ..... :	Jax Gao	
Witnessed by (for 3rd Party Lab Test Location) (name, signature) ..... :	N/A	
Project Handler (name, signature) ..... :	Benjamin Liu	
Reviewer (name, signature) .....:	Rebecca Le	
Gas Analysis Testing Laboratory:	DEKRA Services, Inc.	
Testing location/ address ..... :	Forreston, Illinois	
Project Handler (name, signature) ..... :	Abdollah Kashani	
Reviewer (name, signature) .....:	Bernadette N. Reyes	
List of Attachments (including a total number of pages in each attachment):		
Attachment A: Cell Conditioning (Charge/discharge) Profiles - (*Pages **17** through **19***) **Attachment B**: Cell Instrumentation Photos - (*Pages **20** through **23***) **Attachment C**: Cell Temperature Profiles during testing - (*Pages **24** through **26***) **Attachment D**: Cell Testing Photos - (*Pages **27** through **36***) **Attachment E**: Cell vent gas test chamber photo and profile of chamber gas analysis (O_2 and Pressure) – (*Page **37***) **Attachment F**: Cell Gas Analysis Report - (*Pages **38** through **39***)		

Photo of cell/Stack:

Test Item Charge/Discharge Specifications:	
• Charge current, A:	140
• Maximum charge voltage, Vdc:	3.65
• Charge temperature range, °C:	0~45
• End of charge current, A:	14
• Discharge current, A:	140
• End of discharge voltage, Vdc:	2.5
• Discharge temperature range, °C:	-20~55

Test item particulars ..... :	
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
- test object was completed per the requirement...:	C(Complete)
- test object was completed with modification.....:	M(Modification)
Testing..... :	Cell Model LF280K
Date of receipt of test item ..... :	2021.01.13
Date (s) of performance of tests ..... :	2021.01.14 to 2021.02.19
General remarks:	

"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a point is used as the decimal separator.**	
Manufacturer's Declaration of samples submitted for test:	
The applicant for this report includes samples from more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☒ **Yes** ☐ **Not applicable**
Name and address of factory (ies) ..... :	Factory 1: EVE POWER Co., Ltd. No. 68, Jingnan Avenue, Jingmen Hi-tech Zone Jingmen, CN Factory 2: Jiangsu Yiwei Linyang Energy Storage Technology Co., Ltd No. 500, Linyang Road, Qidong Economic Development Zone, Jiangsu Province, CN
General product information and other remarks: The tested cell is a Lithium-ion battery cell, Model LF280K. Each cell has a capacity of 280 Ah and nominal voltage 3.2 Vdc. The overall dimensions of cell are 207.2±1mm by 173.7±1 mm by 72±1mm. The weight of cell is 5420g. Amendment 1 report: Add a 2nd Factory, Jiangsu Yiwei Liyang Energy Storage Technology Co., Ltd.	

UL 9540A, Edition 4,		
Clause	Requirement + Test	Verdict

Result - Remark

5.0	CONSTRUCTION		Verdict
5.1. 5.4	**Cell/Stack Construction**		—
5.1.1, 5.4.1	Generic Chemistry:	Lithium iron phosphate / C	—
	Electrolyte Chemistry:	LiPF6 with additives	—
	Flow Battery Electrolyte No. 1 Chemistry:		N/A
	Max volume of system electrolyte No. 1, L:		N/A
	Flow Battery Electrolyte No. 2 Chemistry:		N/A
	Max volume of system electrolyte No. 2, L:		N/A
	Separator Melt Temperature, °C:	Not used during test	—
	Format: Cylindrical /Prismatic /Pouch Flow Battery Stack	Prismatic	—
	Overall Dimensions, mm	207.2±1 x 173.7±1 x 72±1	—
	Cell Weight, g	5420 g	—
5.1.2	Cell Certification:		—
	Standard Used for Cell Certification:	UL 1973	—
	Organization that Certified Cell:	UL (MH MH63503)	—

（十）LF280K电芯UN38.3检测报告

广州海关技术中心
GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER
地址：中国广东省广州市天河区珠江新城花城大道66号B座　邮编Postcode：510623
Add.：Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000　邮箱Email：ppde@iqtcnet.cn　网址Website：https://www.iqtcnet.cn

No: 01112200002405Y-1(E)
Date: 2022-08-19
Page: 1 of 14

UN38.3 报告
UN38.3 Test Report

样品名称：　锂离子电池

Sample Name: Li-ion Battery

委托单位：　湖北亿纬动力有限公司

Applicant: EVE POWER CO., LTD

LKOMUDBS4I

广州海关技术中心
GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER

广州海关技术中心 检验检测专用章 (16)

地址：中国广东省广州市天河区珠江新城花城大道66号B座　邮编Postcode：510623
Add.: Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-38131000　邮箱Email：ppde@iqtenet.cn　网址Website：https://www.iqtenet.cn

检 测 证 书
TEST REPORT

样品名称 Sample Name	锂离子电池 Li-ion Battery		
型号 Model	LF280K		
委托单位 Applicant	湖北亿纬动力有限公司 EVE POWER CO., LTD		
委托单位地址 Applicant Address	荆门高新区・掇刀区荆南大道 68 号 NO.68, Jingnan Avenue, Hi-tech Zone, Duodao District, Jingmen, Hubei		
生产单位 Manufacture	湖北亿纬动力有限公司 EVE POWER CO., LTD		
生产单位地址 Manufacture Address	荆门高新区・掇刀区荆南大道 68 号 NO.68, Jingnan Avenue, Hi-tech Zone, Duodao District, Jingmen, Hubei		
样品外观与性状 Appearance & Odor	蓝色方形外壳 Blue square shell		
测试方法和判定标准 Test method and criterion	联合国《关于危险货物运输的建议书 试验和标准手册》ST/SG/AC.10/11/Rev.7, 38.3 UNITED NATIONS " Recommendations on the TRANSPORT OF DANGEROUS GOODS", Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3		
接样时间 Accepted date	2021-01-06	测试日期 Test date	2021-01-07~2021-01-28
测试项目 Test items	高度模拟、温度试验、振动、冲击、外部短路、挤压、强制放电。 Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Crush, Forced discharge.		
结论 Conclusion	经测试，该样品符合联合国《关于危险货物运输的建议书 试验和标准手册》ST/SG/AC.10/11/Rev.7, 38.3 标准要求。 The sample has passed the test items of UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS", Manual of Test and Criteria ST/SG/AC.10/11/Rev.7, 38.3.		
备注 Remark	1. 本报告与 01052100000142-1(E)报告的样品差异在于：1）仅型号变更和防爆阀上方的蓝色塑料保护片外观变更无导致任何试验不符合要求的变化。 The differences between this report and the 01052100000142-1(E) report are as follows: 1) The samples are only change in model, and the appearance of the blue plastic protective sheet above the explosion-proof valve , there is no change that would lead to failure of any tests. 2.随附 UN38.3 试验概要（编号：01112200002405-2(E)）。 Attached with UN38.3 test summary (No.: 01112200002405-2 (E)).		

批准 Approver:　　审核 Checker:　　主检 Appraiser:

地址：中国广东省广州市天河区珠江新城花城大道66号B座 邮编Postcode：510623
Add.：Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000 邮箱Email：ppde@iqtenet.cn 网址Website：https://www.iqtenet.cn

电池信息：

The battery information:

电池类型 Battery type	锂离子电池 Lithium ion batteries	标称电压 Nominal Voltage	3.2V
额定容量 Rated Capacity	280Ah	总能量 Total Energy	896Wh
充电限制电压 Limited Charge Voltage	3.65V	标准充电电流 Standard Charge Current	140A
最大充电电流 Maximum Charge Current	280A	充电截止电流 Charge Cut-off Current	14A
标准放电电流 Standard discharge Current	140A	最大放电电流 Maximum Discharge Current	280A
放电截止电压 Discharge Cut-off Voltage	2.5V	物理形状说明 Physical description	长方体 Cuboid
重量 Mass	5440g	电芯生产单位 Manufacturer of cell	湖北亿纬动力有限公司 EVE POWER CO., LTD

地址：中国广东省广州市天河区珠江新城花城大道66号B座 邮编Postcode：510623
Add.：Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000 邮箱Email：ppde@iqtenet.cn 网址Website：https://www.iqtenet.cn

序号 No.	测试项目名称 Name of test	标准要求或标准条款号 Stand requirement or the clause number of standard	测试结果 Test result	本项结论 Test conclusion	备注 Remark
1	高度模拟 Altitude simulation	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.1 Test T.1	见附表 1 See Appendix 1	合格 Passed	/
2	温度试验 Thermal test	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.2 Test T.2	见附表 2 See Appendix 2	合格 Passed	/
3	振动 Vibration	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.3 Test T.3	见附表 3 See Appendix 3	合格 Passed	/
4	冲击 Shock	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.4 Test T.4	见附表 4 See Appendix 4	合格 Passed	/
5	外部短路 External short circuit	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.5 Test T.5	见附表 5 See Appendix 5	合格 Passed	/
6	挤压 Crush	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.6 Test T.6	见附表 6 See Appendix 6	合格 Passed	/
7	过度充电 Overcharge	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.7 Test T.7	见附表 7 See Appendix 7	不适用 Not applicable	/
8	强制放电 Forced discharge	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.8 Test T.8	见附表 8 See Appendix 8	合格 Passed	/
测试环境 Test environment condition		环境温度：20℃-25℃；环境湿度：45%-75% Ambient temperature: 20℃-25℃, Ambient humidity: 45%-75%			

（十一）LF280K电芯危特报告

广州海关技术中心
GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER
地址：中国广东省广州市天河区珠江新城花城大道66号B座　邮编Postcode：510623
Add.：Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000　邮箱Email：ppdc@iqtenet.cn　网址Website：https://www.iqtenet.cn

编号：01112200002405-3
日期：2022 年 08 月 19 日
页码：共 3 页，第 1 页

危险特性分类鉴别报告

申报品名	锂离子电池		
产品型号	LF280K		
委托单位	湖北亿纬动力有限公司		
生产单位	湖北亿纬动力有限公司		
样品外观与性状	蓝色方形外壳		
测试方法和判定标准	《联合国关于危险货物运输的建议书 规章范本》（第二十二修订版）		
鉴定结论	危险品		
主要危险性	杂项危险物品		
次要危险性	无		
运输专用名称	锂离子电池	危险性类别	9
联合国编号	UN 3480	包装导则	P903/LP903
接样时间	2022 年 08 月 12 日	测试日期	2022 年 08 月 12 日~2022 年 08 月 18 日
备注	1、本证书有效期为签发日起壹年。 2、检验结果仅对样品有效。		

BQ07ADB8TH

报告批准人：

广州海关技术中心 检验检测专用章 (16)

1. 本报告结果仅对所送工作、检验项目或检验批次负责。The results in this report are relevant only to the work ordered or the item(s) or the lot inspected.
2. 未经签发机构书面同意，不得部分引证或复制本报告。Without written permission of IQTC ,this report shall not be quoted or reproduced except in full.
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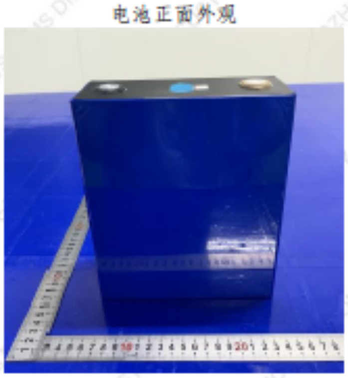
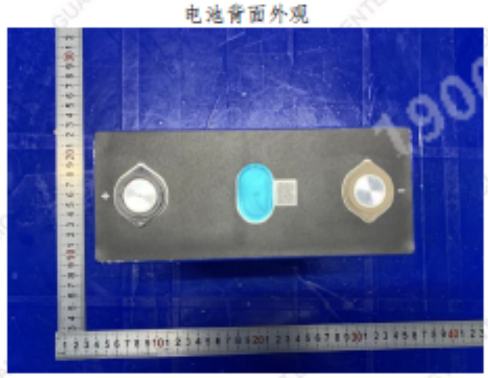
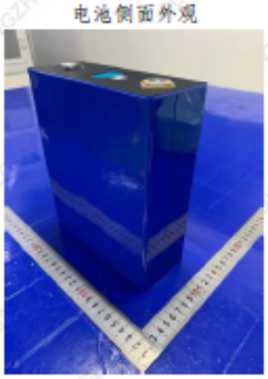
Add.：Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000　邮箱Email：ppdc@iqtcnet.cn　网址Website：https://www.iqtcnet.cn

样品图片

电池正面外观	电池背面外观
	
电池侧面外观	电池铭牌
	

* * * * 报告结束 * * * *

（十二）LF280KV3电芯RoHS、REACH、电池指令测试报告(2023）

Test Report -
Products

TÜVRheinland®
Precisely Right.

Report No.: 168413791a 001

Client:	EVE POWER CO., LTD.
Contact Information:	No. 68, Jingnan Avenue, Hi-tech Zone, Duodao District, Jingmen, Hubei, P. R. China
Manufacturer's name:	EVE POWER CO., LTD.
Test item(s):	20 materials
Identification/ Model No(s):	Li-ion Battery LF280K
Sample obtaining method:	Sending by customer
Condition at delivery:	Test item complete and undamaged.
Sample Receiving date:	2023-02-09, 2023-02-27
Testing Period:	2023-02-17 to 2023-03-03
Place of testing:	Chemical laboratory Shenzhen

Test Specification:

Please refer to "Test Result Summary List" on page 2 for details

Other information:

Manufacturer name: EVE-Linyang Energy Storage Technology Company Limited
Contact Information: No. 608, Huashi Road, Qidong Economic Development Zone, Jiangsu Province

For and on behalf of
TÜV Rheinland (Shenzhen) Co., Ltd.

2023-03-07 — Alvin Huang / Senior Project Engineer

Date — *Name/Position*

TÜV Rheinland (Shenzhen) Co., Ltd. · 1F East & 3F West - 4F, Cybio Technology Building No.1, No. 16 Kejibei 2nd Road,
High-Tech Industry Park North Nanshan District, 518057, Shenzhen, China
Tel.: (86) 755 8258 1188 · Fax: (86) 755 2603 7102 · Mail: service-cn@tuv.com · Web: www.tuv.com

Test Report No.: 168413791a 001 Page 2 of 20

Test Result Summary :

Test Specification:	*Test result:*
Customer's requirement:	
1 Cadmium, Lead, Chromium (VI), Mercury, Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE), ROHS Phthalates (BBP, DBP, DEHP, DIBP) According to RoHS(recast): Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, 2011/65/EU Annex II and its amendment Directive (EU) 2015/863	PASS
2 Heavy Metal Test for Battery - according to the Battery Directive 2006/66/EC and its amendments	PASS
3 Risk Assessment of Articles: Screening of substances of very high concern (SVHC) subject to the candidate list by European Chemical Agency (ECHA) according to Regulation (EC) No. 1907/2006 of REACH and its amendments	SVHC concentration(s) < 0.1%

TÜV Rheinland (Shenzhen) Co., Ltd. · 1F East & 3F West - 4F, Cybio Technology Building No.1, No. 16 Keji'bei 2nd Road, High-Tech Industry Park North Nanshan District, 518057, Shenzhen, China
Tel.: (86) 755 8268 1188 · Fax: (86) 755 2603 7102 · Mail: service-gc@tuv.com · Web: www.tuv.com

（十三） LF280KV3电芯UN38.3检测报告(2023)

广州海关技术中心
GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER

地址：中国广东省广州市天河区珠江新城花城大道66号B座 邮编Postcode：510623
Add.：Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000 邮箱Email：ppdc@iqtenet.cn 网址Website：https://www.iqtenet.cn

No: 01112300000542-1(E)
Date: 2023-03-16
Page: 1 of 14

UN38.3 报告
UN38.3 Test Report

样品名称： 锂离子电池

Sample Name: Lithium-ion battery

委托单位： 湖北亿纬动力有限公司

Applicant: EVE POWER Co., Ltd.

广州海关技术中心
检验检测专用章
(16)

广 州 海 关 技 术 中 心
GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER

JDX58S0JV3

地址：中国广东省广州市天河区珠江新城花城大道66号B座 邮编Postcode：510623
Add.：Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000 邮箱Email：ppdc@iqtenet.cn 网址Website：https://www.iqtenet.cn

检 测 证 书
TEST REPORT

样品名称 Sample Name	锂离子电池 Lithium-ion battery		
型号 Model	LF280K		
委托单位 Applicant	湖北亿纬动力有限公司 EVE POWER Co., Ltd.		
委托单位地址 Applicant Address	荆门高新区·掇刀区荆南大道 68 号 NO.68, Jingnan Avenue, Hi-tech Zone, Duodao District, Jingmen, Hubei		
生产单位 Manufacture	江苏亿纬林洋储能技术有限公司 EVE-Linyang Energy Storage Technology Company Limited		
生产单位地址 Manufacture Address	江苏省启东市经济开发区华石路 608 号 No. 608, Huashi Road, Qidong Economic Development Zone, Jiangsu Province		
样品外观与性状 Appearance & Odor	蓝色方形外壳 Blue square shell		
测试方法和判定标准 Test method and criterion	联合国《关于危险货物运输的建议书 试验和标准手册》ST/SG/AC.10/11/Rev.7, 38.3 UNITED NATIONS " Recommendations on the TRANSPORT OF DANGEROUS GOODS", Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3		
接样时间 Accepted date	2023-02-10	测试日期 Test date	2023-02-10~2023-03-10
测试项目 Test items	高度模拟、温度试验、振动、冲击、外部短路、挤压、强制放电。 Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Crush, Forced discharge.		
结论 Conclusion	经测试，该样品符合联合国《关于危险货物运输的建议书 试验和标准手册》ST/SG/AC.10/11/Rev.7, 38.3 标准要求。 The sample has passed the test items of UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS", Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3.		
备注 Remark	1.随附 UN38.3 试验概要（编号：01112300000542-2(E)）。 Attached with UN38.3 test summary (No.: 01112300000542-2(E)).		

批准 Approver：陈海强 审核 Checker：叶中轩 主检 Appraiser：刘凤超

地址：中国广东省广州市天河区珠江新城花城大道66号B座 邮编Postcode：510623
Add.：Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000 邮箱Email：ppdc@iqtcnet.cn 网址Website：https://www.iqtcnet.cn

电池信息：

The battery information:

电池类型 Battery type	锂离子电池 Lithium ion batteries	标称电压 Nominal Voltage	3.2V
额定容量 Rated Capacity	280Ah	总能量 Total Energy	896Wh
充电限制电压 Limited Charge Voltage	3.65V	标准充电电流 Standard Charge Current	140A
最大充电电流 Maximum Charge Current	280A	充电截止电流 Charge Cut-off Current	14A
标准放电电流 Standard discharge Current	140A	最大放电电流 Maximum Discharge Current	280A
放电截止电压 Discharge Cut-off Voltage	2.5V	物理形状说明 Physical description	长方体 Cuboid 71.7±1mm(T)×173.7±1mm(W)×207.2±1mm(H)
重量 Mass	5.49±0.3kg	电芯生产单位 Manufacturer of cell	江苏亿纬林洋储能技术有限公司 EVE-Linyang Energy Storage Technology Company Limited

地址：中国广东省广州市天河区珠江新城花城大道66号B座 邮编Postcode：510623
Add.：Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000 邮箱Email：ppdc@iqtcnet.cn 网址Website：https://www.iqtcnet.cn

序号 No.	测试项目名称 Name of test	标准要求或标准条款号 Stand requirement or the clause number of standard	测试结果 Test result	本项结论 Test conclusion	备注 Remark
1	高度模拟 Altitude simulation	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.1 Test T.1	见附表 1 See Appendix 1	合格 Passed	/
2	温度试验 Thermal test	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.2 Test T.2	见附表 2 See Appendix 2	合格 Passed	/
3	振动 Vibration	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.3 Test T.3	见附表 3 See Appendix 3	合格 Passed	/
4	冲击 Shock	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.4 Test T.4	见附表 4 See Appendix 4	合格 Passed	/
5	外部短路 External short circuit	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.5 Test T.5	见附表 5 See Appendix 5	合格 Passed	/
6	挤压 Crush	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.6 Test T.6	见附表 6 See Appendix 6	合格 Passed	/
7	过度充电 Overcharge	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.7 Test T.7	见附表 7 See Appendix 7	不适用 Not applicable	/
8	强制放电 Forced discharge	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.7, 38.3 试验 T.8 Test T.8	见附表 8 See Appendix 8	合格 Passed	/
测试环境 Test environment condition		环境温度：20℃-25℃；环境湿度：45%-75% Ambient temperature: 20℃-25℃, Ambient humidity: 45%-75%			

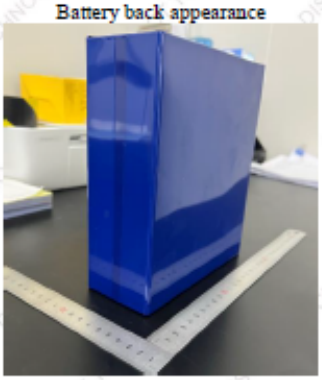
地址：中国广东省广州市天河区珠江新城花城大道66号B座　邮编Postcode：510623
Add.：Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000　邮箱Email：ppdc@iqtenet.cn　网址Website：https://www.iqtenet.cn

样品图片
Photo of the sample

电池正面外观
Battery front appearance

电池侧面外观
Battery side appearance

电池背面外观
Battery back appearance



电池铭牌(含 Wh)
Battery nameplate (With Wh)

（十四）LF280K V3电芯危特报告

广州海关技术中心
GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER

地址：中国广东省广州市天河区珠江新城花城大道66号B座　邮编Postcode：510623
Add.: Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, Guangdong, P.R.C.
电话Tel：020-22131000　邮箱Email：ppdc@iqtcnet.cn　网址Website：https://www.iqtcnet.cn

编号：01112300000542-3
日期：2023 年 03 月 16 日
页码：共 3 页，第 1 页

危险特性分类鉴别报告

申报品名	锂离子电池		
产品型号	LF280K		
委托单位	湖北亿纬动力有限公司		
生产单位	江苏亿纬林洋储能技术有限公司		
样品外观与性状	蓝色方形外壳		
测试方法和判定标准	《联合国关于危险货物运输的建议书 规章范本》(第二十二修订版)		
鉴定结论	危险品		
主要危险性	杂项危险物品		
次要危险性	无		
运输专用名称	锂离子电池	危险性类别	9
联合国编号	UN 3480	包装导则	P903/LP903
接样时间	2023 年 02 月 10 日	测试日期	2023 年 02 月 10 日~2023 年 03 月 10 日
备注	1、本证书有效期为签发日起壹年。 2、检验结果仅对样品有效。		
EXWOQJIUPT	广州海关技术中心 检验检测专用章 (16)	报告批准人：陆裕强	

1. The results in this report are relevant only to the work ordered or the item(s) or the lot inspected.
2. Without written permission of IQTC ,this report shall not be quoted or reproduced except in full.
3. The report is not legally binding and could only be used as internal reference material for the applicant. It shall not be provided as a notarial certification.

IQTC-QP-16-08-055

- **电芯认证证书**

（一）LF280K电芯（CGC）GBT36276证书

鉴衡认证
CHINA GENERAL CERTIFICATION

储能产品认证证书

安全和基本性能认证

证书编号：CGC2022003002153

申请人及地址：湖北亿纬动力有限公司
荆门高新区·掇刀区荆南大道68号

制造商及地址：湖北亿纬动力有限公司
荆门高新区·掇刀区荆南大道68号

生产厂及地址：湖北亿纬动力有限公司
荆门高新区·掇刀区荆南大道68号

产品名称：电力储能用锂离子电池单体（方形铝壳磷酸铁锂电池）

商　　标：/

型　　号：LF280K

主要性能参数：详见证书附页（共1页）

标准、技术要求：GB/T 36276-2018《电力储能用锂离子电池》

认证模式：型式试验 + 初始工厂检查 + 获证后监督

上述产品符合CGC-R46104:2019A《储能产品认证实施规则（电力储能用锂离子电池）》要求，特发此证。

本证书与证书附页及当年证书使用保持通知书同时使用方为有效。获证企业在产品设计及制造方面的任何改变需经本机构批准，否则本证书无效。

签发：

CNAS 中国认可 产品 PRODUCT CNAS C121-P

发证日期：2022-01-28

北京鉴衡认证中心有限公司 证书专用章 1101052249097

北京鉴衡认证中心有限公司

地址：北京市东城区和平里北街6号26号楼三层301 网址：www.cgc.org.cn

鉴衡认证
CHINA GENERAL CERTIFICATION

储能产品认证证书　附页

证书编号：CGC2022003002153

主要性能参数：　　页码：1/1

锂离子电池单体规格参数表			
产品名称	电力储能用锂离子电池单体（方形铝壳磷酸铁锂电池）		
型号	LF280K		
规格	Li-Cell-EES 3.2V-448W-448W-896Wh-896Wh		
参数类型	符号	单位	数值
额定充电小时率	n	/	2
额定放电小时率	n'	/	2
n小时率额定充电功率	P_{cn}	W	448
n'小时率额定放电功率	$P_{cn'}$	W	448
n小时率额定充电能量	E_{cn}	W·h	896
n'小时率额定放电能量	$E_{cn'}$	W·h	896
n小时率额定充电容量	C_{cn}	A·h	280
n'小时率额定放电容量	$C_{cn'}$	A·h	280
电池单体标称电压	/	V	3.2
电池单体尺寸（长×宽×高）	/	mm	(72.0±1.0)×(174.0±1.0) ×(207.0±1.0)
电池单体质量	/	kg	5.44±0.2
电池单体充电终止电压	/	V	3.65
电池单体放电终止电压	/	V	2.5
电池单体充电告警电压	/	V	3.7
电池单体放电告警电压	/	V	2.3
电池单体充电保护电压	/	V	3.8
电池单体放电保护电压	/	V	2
电池单体告警温度	/	℃	60
电池单体保护温度	/	℃	65
M值（功率型电池单体）	/	/	/
最大持续充电电流	/	A	720
最大持续放电电流	/	A	720
允许的工作温度范围	/	℃	-40~65
允许的存储温度范围	/	℃	0~35
注：n，n'应从下列数值中选取：8、4、2、1、0.5、0.25，M值为整数，且M=1。			

签发：

发证日期：2022-01-28

北京鉴衡认证中心有限公司 证书专用章 1101052249097

北京鉴衡认证中心有限公司

地址：北京市东城区和平里北街6号26号楼三层301 网址：www.cgc.org.cn

鉴衡认证

发证通知书

编号：CGC2022-003002-000450

湖北亿纬动力有限公司：

根据贵单位/公司的申请和本中心的认证结果，贵单位/公司符合认证条件。特颁发如下证书：

序号	证书编号	产品名称	产品型号
1	CGC2022003002153	电力储能用锂离子电池单体（方形铝壳磷酸铁锂电池）	LF280K（规格：Li-Cell-EES 3.2V-448W-448W-896Wh-896Wh）

北京鉴衡认证中心有限公司

签发日期：2022年01月28日

北京鉴衡认证中心有限公司

地址：北京市东城区和平里北街6号26号楼三层301 网址：www.cgc.org.cn

鉴衡认证

认证标志使用授权书

编号：CGC2022-003002-000450

湖北亿纬动力有限公司：

兹批准下列申请人及生产厂在下述产品上使用认证标志。认证标志的使用应遵守本中心《自愿性产品认证 认证证书和认证标志管理程序》（CGC-QP-V08）的相关要求。

申 请 人：湖北亿纬动力有限公司

制 造 商：湖北亿纬动力有限公司

生 产 厂：湖北亿纬动力有限公司

产　　品：电力储能用锂离子电池单体（方形铝壳磷酸铁锂电池）

证书编号：CGC2022003002153

认证标志：

北京鉴衡认证中心有限公司

日　　期：2022-01-28

（二）LF280K电芯TUV(IEC 62619)认证证书

IEC IECEE

Ref. Certif. No.
JPTUV-120529-A2

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Rechargeable lithium ion Cell
Name and address of the applicant	EVE POWER Co., Ltd. No. 68, Jingnan Avenue, Jingmen Hi-tech Zone, Jingmen City, Hubei, P.R. China
Name and address of the manufacturer	EVE POWER Co., Ltd. No. 68, Jingnan Avenue, Jingmen Hi-tech Zone, Jingmen City, Hubei, P.R. China
Name and address of the factory	EVE POWER Co., Ltd. No. 68, Jingnan Avenue, Jingmen Hi-tech Zone, Jingmen City, Hubei, P.R. China
Ratings and principal characteristics	3.2 V, 280 Ah
Trademark (if any)	
Customer's Testing Facility (CTF) Stage used	N/A
Model / Type Ref.	LF280K
Additional information (if necessary may also be reported on page 2)	Re-issue of JPTUV-120529-A1 dated 2022-04-21, due to non-technical change.
A sample of the product was tested and found to be in conformity with	IEC 62619:2017 See Test Report for National Differences
As shown in the Test Report Ref. No. which forms part of this Certificate	CN21LSPD 003

This CB Test Certificate is issued by the National Certification Body

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021, Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web : www.tuv.com

Date: 2022-09-07

Signature: A. Chen

Disclaimer: This is an electronically released document. The authenticity of this certificate can be verified on the IECEE Website "http://certificates.iecee.org"

（三）LF280K电芯UL1642认证证书

CERTIFICATE OF COMPLIANCE

Certificate Number	MH62190
Report Reference	MH62190-20211224
Date	2021-December-28
Issued to:	EVE POWER Co., Ltd. No. 68, Jingnan Avenue, Jingmen Hi-tech Zone Jingmen 448000 CN
This is to certify that representative samples of	LITHIUM BATTERIES - COMPONENT USR Component – Secondary, Lithium-ion prismatic cells LF280K
	Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.
Standard(s) for Safety:	UL 1642 - Standard for Safety for Lithium Batteries
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

（四）LF280K电芯UL1973认证证书

CERTIFICATE OF COMPLIANCE

Certificate Number	MH63503
Report Reference	MH63503-20210331
Date	2021-April-16
Issued to:	EVE POWER Co., Ltd. No. 68, Jingnan Avenue, Jingmen Hi-tech Zone Jingmen448000 CN
This is to certify that representative samples of	BATTERY CELLS FOR USE IN STATIONARY AND/OR TRANSPORT APPLICATIONS - COMPONENT See Addendum Page for Product Designation(s).
	Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.
Standard(s) for Safety:	Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications ANSI/CAN/UL 1973
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	MH63503
Report Reference	MH63503-20210331
Date	2021-April-16

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Component – Lithium ion Cell

Model Number:LF280K

Bruce Mahrenholz, Director North American Certification Program

UL LLC

（五）LF280K电芯CCS认证证书

中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
WH22PTB00053

型式认可证书
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。
This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

湖北亿纬动力有限公司
EVE POWER Co., Ltd.

地址/Address

湖北荆门高新区・掇刀区荆南大道68号
NO.68,Jingnan Avenue High-Tech Zone,Duodao District,Jingmen,Hubei,China

产品名称/Product

磷酸铁锂单体电池
Lithium Iron Phosphate Battery Cell
磷酸铁锂电池
Lithium Iron Phosphate Battery

认可标准/Approval Standard

1. 中国船级社《钢质海船入级规范》（2021）及其修改通报第4篇第1, 3章
Chapter1, 3, Part Four of China Classification Society Rules for Classification of Sea-Going Steel Ships 2021 and its Amendments
2. 中国船级社《钢质内河船舶建造规范》（2016）及其修改通报第3篇第1, 5章
Chapter 1,5 Part Three of China Classification Society Rules for Construction of Inland Steel Ships 2016 and its Amendments
3. 中国船级社《纯电池动力船舶检验指南》（2019）第1, 2, 3章
Chapter 1,2,3 of China Classification Society rules for Inspection guide for battery powered electric ship 2019

用于/Intended for

船舶与海上设施/Ships and Offshore Installations

产品明细/Product Description

磷酸铁锂电池/Lithium Iron Phosphate Battery (M0001)

名称/Name	属性（值）/Value	单位/Unit
型号/Type	LF50K	
额定电压/Rated Voltage	3.2	V
额定容量/Rated Capacity	50	Ah
安全等级/Safety Class	2	

证书有效期至/This Certificate is valid until **2026年02月10日/ Feb. 10,2026**

发证机构 中国船级社武汉分社
Issued by CCS Wuhan Branch

签发日期 2022年05月31日
Date May. 31,2022

本证书根据中国船级社规范和有关规定签发。所有证书页为一个整体，必须同时使用。纸质证书每页均须由本社盖章方为有效，电子证书含数字签名方为有效。本证书复印件无效。任何单位和个人均不应摘录或节选本证书的部分内容。有关方对所持证书的真实性有疑问时，可以向我社检验机构咨询。
This Certificate is issued pursuant to the Rules of the Society and related regulation. All pages of the certificate are taken as a whole and are used simultaneously. No paper certificate page is valid without bearing the stamp of the Society, no electronic certificates is valid without the digital signature, and no copied form of the certificate is regarded as valid. Any part of the certificate is not to be extracted or abridged by any unit or individual in any form. Related parties who are doubtful about the authenticity of the certificate may inquire of the Society or its offices.

Form No: T01. 联系方式/Contact Us：见本社官方网站/See official web site of the Society（http://www.ccs.org.cn） UTN:P022-17747325

第1页共3页/Page 1 of 3

磷酸铁锂电池/Lithium Iron Phosphate Battery（M0002）

名称/Name	属性（值）/Value	单位/Unit
型号/Type	LF105	
额定电压/Rated Voltage	3.2	V
额定容量/Rated Capacity	105	Ah
安全等级/Safety Class	2	

磷酸铁锂电池/Lithium Iron Phosphate Battery（M0003）

名称/Name	属性（值）/Value	单位/Unit
型号/Type	LF250	
额定电压/Rated Voltage	3.2	V
额定容量/Rated Capacity	250	Ah
安全等级/Safety Class	2	

磷酸铁锂电池/Lithium Iron Phosphate Battery（M0004）

名称/Name	属性（值）/Value	单位/Unit
型号/Type	LF280K	
额定电压/Rated Voltage	3.2	V
额定容量/Rated Capacity	280	Ah
安全等级/Safety Class	2	

磷酸铁锂电池/Lithium Iron Phosphate Battery（M0005）

名称/Name	属性（值）/Value	单位/Unit
型号/Type	LF304	
额定电压/Rated Voltage	3.2	V
额定容量/Rated Capacity	304	Ah
安全等级/Safety Class	2	

批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No.： WH21PPP20362、WH21PPP20298 、WH21PPP20297

产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No.： QV21LB1XAZ051
试验报告日期/ Test Report Date： 2021-11-26
试验单位/ Laboratory: 中汽研汽车检验中心（武汉）有限公司 CATARC Automotive Inspection Center (Wuhan) Co.,Ltd
试验单位地址/ Test Address: 武汉市经济技术开发区沌阳大道55号 No.55 Zhuan Yang Avenue Economic &, Technological Development, Zone Wuhan, China

试验报告编号/ Test Report No.： QV21LB1XAZ041
试验报告日期/ Test Report Date： 2021-11-26
试验单位/ Laboratory: 中汽研汽车检验中心（武汉）有限公司 CATARC Automotive Inspection Center (Wuhan) Co.,Ltd
试验单位地址/ Test Address: 武汉市经济技术开发区沌阳大道55号 No.55 Zhuan Yang Avenue Economic &, Technological Development, Zone Wuhan, China

试验报告编号/ Test Report No.： QV21LB1XAZ021
试验报告日期/ Test Report Date： 2022-03-04
试验单位/ Laboratory: 中汽研汽车检验中心（武汉）有限公司 CATARC Automotive Inspection Center (Wuhan) Co.,Ltd
试验单位地址/ Test Address: 武汉市经济技术开发区沌阳大道55号 No.55 Zhuan Yang Avenue Economic &, Technological Development, Zone Wuhan, China

试验报告编号/ Test Report No.： EVE20211201001
试验报告日期/ Test Report Date： 2021-12-06
试验单位/ Laboratory: 湖北亿纬动力有限公司 EVE POWER Co., Ltd.
试验单位地址/ Test Address: 荆门高新区·掇刀区荆南大道68号 NO.68, Jingnan Avenue, Hi-tech Zone, Duodao

（六）LF280K电芯海运认证证书

广州海关技术中心
GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER

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海运
By Sea

货物运输条件鉴定书

Certification for Safe Transport of Goods

第九类危险品
Dangerous Goods Class 9

货物名称： 锂离子电池
Goods Name: Li-ion Battery
委托单位： 湖北亿纬动力有限公司
Applicant: EVE POWER CO., LTD

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GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER

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No: 01112200004124-2(E)
Date: 2022-12-26

货物运输条件鉴定书

Certification for Safe Transport of Goods

货物名称 Goods Name	锂离子电池 Li-ion Battery						
型号 Model	LF280K						
委托单位 Applicant	湖北亿纬动力有限公司 EVE POWER CO., LTD.						
生产单位 Manufacturer	湖北亿纬动力有限公司 EVE POWER CO., LTD.						
检查方法、程序 Inspection Method and Procedure	《国际海运危险货物规则》(40-20 版) IMO International Maritime Dangerous Goods Code (40-20 Edition)						
样品外观 Sample Appearance	蓝色方形外壳 Blue square shell						
包装件信息 Package Information	电池数量 Quantity	6 个 6 PCS	重量 Weight	33.52kg	尺寸 Size	426 mm(W)*302mm(H)*245mm(T)	
电池信息 Battery Information	序号 No.	类型 Type	型号 Model		额定瓦时值 Watt-hour Rating	放置方式 Placement	
	1	锂离子电池 Lithium ion batteries	LF280K		896Wh	只有电池 Battery only	
鉴定结论 Identification conclusion	1. 危险性识别(Hazards identification)：第 9 类杂项危险物质/ class or division is 9。 2. 按照《国际海运危险货物规则》办理类项(Suggestion according to IMDG Code) 按危险货物条件办理。According to the conditions of Dangerous cargo handled. 运输专用名称：锂离子电池。 Proper shipping name: LITHIUM ION BATTERIES. UN NO.：UN 3480. 危险类别：第 9 类 Class or division : 9 3. 包装要求(Packaging requirements)： 根据包装导则 P903 办理。 The goods are packaged according to the packaging instruction P903. 检查日期(Inspection date)：2022-12-08~2022-12-19 签发日期(Valid date)：2022-12-26 报告有效期(Period of validity)：2023-01-01~2023-12-31						
备注 Remark	每个包装件应贴有 9 类锂电池危险性标签。 Each package must be labelled with a Class 9-Lithium Battery hazard label.						

广州海关技术中心 检验检测专用章 (16)

批准 Approver：

审核 Checker：

主检 Appraiser：

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No: 01112200004124-2(
Date: 2022-12-26

货物运输条件鉴定书

Certification for Safe Transport of Goods

图片/Photo	
包装正面外观 Front appearance of Packaging 	包装侧面外观 Side appearance of Packaging 
内包装（防止短路，防移位保护措施） Inner packagings（protection against short circuit and displacement） 	UN 号，包装等级，9A 号标签 UN NO., packing group, 9A label 

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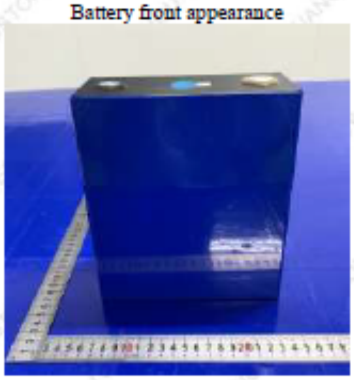
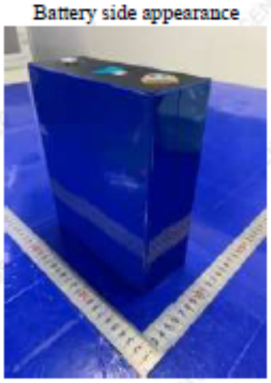
货物运输条件鉴定书

Certification for Safe Transport of Goods

图片/Photo	
电池正面外观 Battery front appearance 	电池背面外观 Battery back appearance 
电池侧面外观 Battery side appearance 	电池铭牌(含 Wh) Battery nameplate (with Wh) 

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货物运输条件鉴定书
Certification for Safe Transport of Goods

序号 No.	检查结果及其他事项 Inspection results and other things
1	本报告所述锂电池已通过联合国《试验和标准手册》第 III 部分 38.3 小节相应测试要求（证书编号：01112200002405Y-1(E), UN38.3 试验概要：01112200002405-2(E)）。 Lithium cells and batteries listed in this report are of the types proven to meet the requirements of each applicable test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3(Test Report No.: 01112200002405Y-1(E), UN38.3 test summary: 01112200002405-2(E)).
2	本报告所述锂电池按照《国际海运危险货物运输规则》2.9.4（5）规定的质量管理体系进行制造。 Lithium cells and batteries listed in this report were manufactured under the quality management programmer as described in IMDG Code 2.9.4(5).
3	电池和电池组，除安装在设备上的之外，应使用内容器包装，将电池和电池组完全包裹。应保护电池和电池组防止发生短路。 Cells and batteries, except when installed in equipment, shall be packed in inner packagings that completely enclose the cell or battery. Cells and batteries shall be protected so as to prevent short circuits.
4	锂电池有适当的保护措施防止其在包装件内移位。 Cells and batteries are properly protected so as to secure against movement within the outer package.
5	每个包装件必须使用9类锂电池危险性标签(9A号)。 Each package must be labelled with the Class 9-Lithium Battery hazard label (No.9A).
6	2011年12月31日后生产的蓄电池须在外部标记瓦特-小时的额定值。 Batteries manufacture after 31 December 2011 must be marked with the Watt-hour rating on outside case.
备注 Remark	适用于海运。 Be applicable to transport by sea.

（七）LF280K电芯空运认证证书

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空 运
By Air

货物运输条件鉴定书

Certification for Safe Transport of Goods

锂电池—符合包装说明 965 第 IA 部分

Lithium Ion Batteries-Applies to Section IA of Packing Instruction 965

货物名称：	锂离子电池
Goods Name:	Li-ion Battery
委托单位：	湖北亿纬动力有限公司
Applicant:	EVE POWER CO., LTD.

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广州海关技术中心
检验检测专用章(16)

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No: 01112200004124-1(E)
Date: 2022-12-26

货物运输条件鉴定书
Certification for Safe Transport of Goods

货物名称 Goods Name	锂离子电池 Li-ion Battery						
型号 Model	LF280K						
委托单位 Applicant	湖北亿纬动力有限公司 EVE POWER CO., LTD.						
生产单位 Manufacturer	湖北亿纬动力有限公司 EVE POWER CO., LTD.						
检查方法、程序 Inspection Method and Procedures	国际航空运输协会《危险品规则》64 版 IATA Dangerous Goods Regulations (DGR) 64th Edition						
样品外观 Sample Appearance	蓝色方形外壳 Blue square shell						
包装件信息 Package Information	电池数量 Quantity	6 个 6 PCS	净数量 Net quantity	32.52 kg	尺寸 Size	426 mm(W)*302mm(H)*245mm(T)	
电池信息 Battery Information	序号 No.	类型 Type	型号 Model	瓦特-小时额定值 Watt-hour rating	放置方式 Placement		
	1	锂离子电池 Lithium ion batteries	LF280K	896Wh	只有电池 Battery only		
鉴定结论 Identification Conclusion	1. 危险性识别(Hazards identification)：第 9 类杂项危险物质/ class or division is 9。 2. 按照国际航空运输协会《危险品规则》办理类项(Suggestion according to IATA DGR) 该物品满足包装说明 965 基本要求和第 IA 部分的规定。 The goods meet the requirements in General Requirements and section IA of Packaging Instruction 965 运输专用名称：锂离子电池 Proper shipping name: Lithium ion batteries UN NO.：UN 3480. 危险类别：第 9 类 Class or division : 9 3. 包装要求(Packaging requirements)： 根据包装说明 965-IA 部分办理，仅限货机。 The goods are packaged according to the packaging instruction 965 section IA, Cargo Aircraft only. 检查日期(Inspection date)：2022-12-08~2022-12-19 签发日期(Valid date)：2022-12-26 报告有效期(Period of validity)：2023-01-01~2023-12-31						
备注 Remark	每个包装件应贴有 9 类锂电池危险性标签和仅限货机标签。 Each package must be labelled with a Class 9-Lithium Battery hazard label and cargo aircraft only label.						

检验检测专用章 (16)

批准 Approver：陈海强 审核 Checker：叶中轩 主检 Appraiser：张俊生

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货物运输条件鉴定书

Certification for Safe Transport of Goods

图片/Photo

包装正面外观
Front appearance of Packaging

包装侧面外观
Side appearance of Packaging

内包装（防止短路，防移位保护措施）
Inner packagings（protection against short circuit and displacement）

UN号，包装等级，9A号标签，仅限货机标签
UN NO., packing group, 9A label, Cargo aircraft only label

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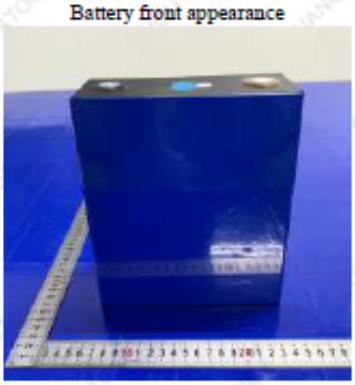
Date: 2022-12-26

货物运输条件鉴定书

Certification for Safe Transport of Goods

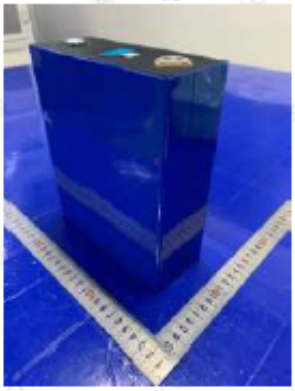
图片/Photo

电池正面外观
Battery front appearance



电池背面外观
Battery back appearance

电池侧面外观
Battery side appearance



电池铭牌(含 Wh)
Battery nameplate (with Wh)

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货物运输条件鉴定书

Certification for Safe Transport of Goods

序号 No.	检查结果及其他事项 Inspection results and other things
1	客户声明 Consignor announcement： 本报告所述锂电池无明显安全缺陷，不属于因安全原因召回的锂电池； Lithium cells and batteries listed in this report have no significant defect, and they are not the defective cells or batteries returned to the manufacturer for safety reasons. 本报告所述锂电池不进行以回收或处置为目的的航空运输，不属于废弃锂电池； Lithium cells and batteries listed in this report are not waste lithium cells or batteries, and they will not be shipped for recycling or disposal from air transport. 本报告所述锂电池按照《危险品规则》3.9.2.6.1(e)规定的质量管理体系进行制造。 Lithium cells and batteries listed in this report were manufactured under the quality management programmer as described in DGR 3.9.2.6.1(e). 提供用于空运的锂电池所带的电量不可超过额定容量的 30% Lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design.
2	本报告所述锂电池已通过联合国《试验和标准手册》第 III 部分 38.3 小节相应测试要求（证书编号：01112200002405Y-1(E), UN38.3 试验概要：01112200002405-2(E)）。 Lithium cells and batteries listed in this report are of the types proven to meet the requirements of each applicable test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3(Test Report No.: 01112200002405Y-1(E), UN38.3 test summary：01112200002405-2(E)). 包装件的净数量不超过 35kgPackages of net quantity not exceeding 35kg
3	锂电池完全封装在内包装内，位于坚固的外包装中，电池具有适当的防短路措施。 Lithium cells and batteries are packed in inner packaging's that completely enclose the cell or battery and placed in a strong outer packaging. Cells and batteries are properly protected to prevent short circuits.
4	电池芯和电池不可与第 1 类爆炸品（1.4S 项除外），2.1 项易燃气体，第 3 类易燃液体，4.1 项易燃固体或 5.1 项氧化性物质的危险品放入同一个外包装中。 Cells and batteries must not be packed in the same outer packaging with dangerous goods classified in Class 1 (explosives) other than Division 1.4S, Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) or Division 5.1 (oxidizers). 电池芯和电池的包装件不可与第 1 类爆炸品（1.4S 项除外），2.1 项，第 3 类，4.1 项或 5.1 项危险品的包装件放入同一个 Overpack 中。 Packages containing cells or batteries must not be placed in an overpack with packages containing dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1 , Class 3, Division 4.1 or Division 5.1.
5	电池重量大于等于 12 kg 并有坚固耐冲击的外壳，并且装在保护性外壳中（例如木板箱）可以运输并且不受第六章的管制，如果有产地国的豁免。豁免文件必须放在货物当中。 Batteries with a weight of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packaging's or protective enclosures (e.g. in fully enclosed or wooden slated crates) not subject to the requirements of Section 6 of these Regulation, if approved by the appropriate authority of the State of origin. A copy of the document of approval must accompany the consignment
6	2011 年 12 月 31 日后制造的电池要在外包装上标明瓦时-小时的额定值。 Batteries manufacture after 31 December 2011 must be marked with the Watt-hour rating on outside case.
备注 Remark	适用于空运。 Be applicable to transport by air.

（八）LF280K电芯MSDS认证证书

广州海关技术中心
GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER

地址：中国广东省广州市天河区珠江新城花城大道66号B座　邮编Posteode：510623
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电话Tel：020-22131000　邮箱Email：ppdc@iqtenet.cn　网址Website：https://www.iqtenet.cn

编号：01112200002405-4
日期：2022 年 08 月 19 日
页码：共 1 页，第 1 页

审核报告
（安全数据单）

申　请　人：湖北亿纬动力有限公司

地　　址：荆门高新区·掇刀区荆南大道 68 号

样 品 名 称：锂离子电池

接 样 日 期：2022 年 08 月 12 日

型　　号：LF280K

审 核 依 据：GB/T 16483-2008
联合国《关于危险货物运输的建议书•规章范本》（第二十二修订版）
《全球化学品统一分类和标签制度》（第九修订版）

审 核 结 果：经审核，申请人提交的安全数据单（MSDS）符合要求。

备　　注：1.本报告须与危险特性分类鉴别报告（证书编号：01112200002405-3）和审核后的安全数据单同时使用时才有效。
2.申请人需对提供的安全数据单和样品成分说明的数据准确性和真实性负责，承担因信息错误造成的一切可能后果。

GKP4YW15A8

报告批准人：

* * * * 报告结束 * * * *

检验检测专用章 (16)

1. 本报告结果仅对测试样品负责。The results in this report are relevant only to the sample(s) tested.
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（九）LF280KV3电芯海运认证证书

广州海关技术中心
GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER

No: 01112300000542-7(E)
Date: 2023-03-16
Page: 1 of 6

海运
By Sea

货物运输条件鉴定书

Certification for Safe Transport of Goods

第九类危险品

Dangerous Goods Class 9

货物名称：	锂离子电池
Goods Name:	Lithium-ion battery
委托单位：	湖北亿纬动力有限公司
Applicant:	EVE POWER Co., Ltd.

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广州海关技术中心
检验检测专用章
(16)

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No: 01112300000542-7(E)
Date: 2023-03-16

货物运输条件鉴定书

Certification for Safe Transport of Goods

<table>
<tr><td>货物名称
Goods Name</td><td colspan="7">锂离子电池
Lithium-ion battery</td></tr>
<tr><td>型号
Model</td><td colspan="7">LF280K</td></tr>
<tr><td>委托单位
Applicant</td><td colspan="7">湖北亿纬动力有限公司
EVE POWER Co., Ltd.</td></tr>
<tr><td>生产单位
Manufacturer</td><td colspan="7">江苏亿纬林洋储能技术有限公司
EVE-Linyang Energy Storage Technology Company Limited</td></tr>
<tr><td>检查方法、程序
Inspection Method and Procedure</td><td colspan="7">《国际海运危险货物规则》(40-20 版)
IMO International Maritime Dangerous Goods Code (40-20 Edition)</td></tr>
<tr><td>样品外观
Sample Appearance</td><td colspan="7">蓝色方形外壳
Blue square shell</td></tr>
<tr><td>包装件信息
Package Information</td><td colspan="2">电池数量
Quantity</td><td>100 个
100 PCS</td><td>重量
Weight</td><td>622.5kg</td><td>尺寸
Size</td><td>1200 mm(L)*1100mm(W)*628mm(H)</td></tr>
<tr><td rowspan="2">电池信息
Battery Information</td><td>序号
No.</td><td colspan="2">类型
Type</td><td colspan="2">型号
Model</td><td>额定瓦时值
Watt-hour Rating</td><td>放置方式
Placement</td></tr>
<tr><td>1</td><td colspan="2">锂离子电池
Lithium ion batteries</td><td colspan="2">LF280K</td><td>896Wh</td><td>只有电池
Battery only</td></tr>
<tr><td>鉴定结论
Identification conclusion</td><td colspan="7">1. 危险性识别(Hazards identification)：第 9 类杂项危险物质/ class or division is 9。
2. 按照《国际海运危险货物规则》办理类项(Suggestion according to IMDG Code)
按危险货物条件办理。According to the conditions of Dangerous cargo handled.
运输专用名称：锂离子电池。
Proper shipping name: LITHIUM ION BATTERIES
UN NO.：UN 3480
危险类别：第 9 类 Class or division : 9

3. 包装要求(Packaging requirements)：
根据包装导则 LP903 办理。
The goods are packaged according to the packaging instruction LP903.

检验日期(Inspection date)：2023-02-10~2023-03-10
鉴定日期(Valid date)：2023-03-16
报告有效期(Period of validity)：2023-03-16~2023-12-31</td></tr>
<tr><td>备注
Remark</td><td colspan="7">每个包装件应贴有 9 类锂电池危险性标签。
Each package must be labelled with a Class 9-Lithium Battery hazard label.</td></tr>
</table>

批准 Approver：　　审核 Checker：　　主检 Appraiser：

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货物运输条件鉴定书

Certification for Safe Transport of Goods

图片/Photo	
包装正面外观 Front appearance of Packaging 	包装侧面外观 Side appearance of Packaging 
内包装（防止短路，防移位保护措施） Inner packagings (protection against short circuit and displacement) 	
UN号，包装等级，9A号标签 UN NO., packing group, 9A label 	

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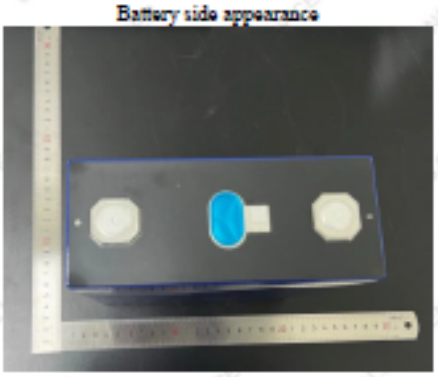
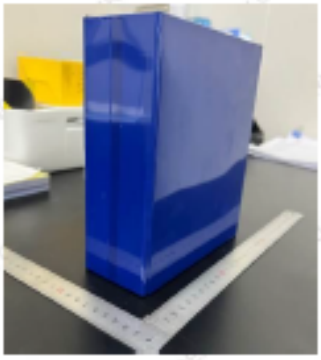
货物运输条件鉴定书

Certification for Safe Transport of Goods

图片/Photo	
电池正面外观 Battery front appearance 	电池侧面外观 Battery side appearance 
电池侧面外观 Battery side appearance 	电池铭牌(含 Wh) Battery nameplate (with Wh) 

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货物运输条件鉴定书
Certification for Safe Transport of Goods

序号 No.	检查结果及其他事项 Inspection results and other things
1	本报告所述锂电池已通过联合国《试验和标准手册》第 III 部分 38.3 小节相应测试要求（证书编号：01112300000542-1(E), UN38.3 试验概要：01112300000542-2(E)）。 Lithium cells and batteries listed in this report are of the types proven to meet the requirements of each applicable test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3(Test Report No.: 01112300000542-1(E)，UN38.3 test summary：01112300000542-2(E)).
2	本报告所述锂电池按照《国际海运危险货物运输规则》2.9.4（5）规定的质量管理体系进行制造。 Lithium cells and batteries listed in this report were manufactured under the quality management programmer as described in IMDG Code 2.9.4(5).
3	电池和电池组，除安装在设备上的之外，应使用内容器包装，将电池和电池组完全包裹。应保护电池和电池组防止发生短路。 Cells and batteries, except when installed in equipment, shall be packed in inner packagings that completely enclose the cell or battery. Cells and batteries shall be protected so as to prevent short circuits.
4	锂电池有适当的保护措施防止其在包装件内移位。 Cells and batteries are properly protected so as to secure against movement within the outer package.
5	每个包装件必须使用9类锂电池危险性标签(9A号)。 Each package must be labelled with the Class 9-Lithium Battery hazard label (No.9A).
6	2011年12月31日后生产的蓄电池须在外部标记瓦特-小时的额定值。 Batteries manufacture after 31 December 2011 must be marked with the Watt-hour rating on outside case.
备注 Remark	适用于海运。 Be applicable to transport by sea.

（十）LF280KV3电芯空运认证证书

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No: 01112300000542-6(E)
Date: 2022-03-16
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空 运
By Air

货物运输条件鉴定书

Certification for Safe Transport of Goods

锂电池—符合包装说明 965 第 IA 部分

Lithium Ion Batteries-Applies to Section IA of Packing Instruction 965

货物名称：	锂离子电池
Goods Name:	Lithium-ion battery
委托单位：	湖北亿纬动力有限公司
Applicant:	EVE POWER Co., Ltd.

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广州海关技术中心 检验检测专用章 (16)

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货物运输条件鉴定书
Certification for Safe Transport of Goods

货物名称 Goods Name	锂离子电池 Lithium-ion battery						
型号 Model	LF280K						
委托单位 Applicant	湖北亿纬动力有限公司 EVE POWER Co., Ltd.						
生产单位 Manufacturer	江苏亿纬林洋储能技术有限公司 EVE-Linyang Energy Storage Technology Company Limited						
检查方法、程序 Inspection Method and Procedures	国际航空运输协会《危险品规则》64 版 IATA Dangerous Goods Regulations (DGR) 64th Edition						
样品外观 Sample Appearance	蓝色方形外壳 Blue square shell						
包装件信息 Package Information	电池数量 Quantity	6 个 6 PCS	净数量 Net quantity	32.94 kg	尺寸 Size	495 mm(L)*395mm(W)*416mm(H)	

电池信息 Battery Information	序号 No.	类型 Type	型号 Model	瓦特-小时额定值 Watt-hour rating	放置方式 Placement
	1	锂离子电池 Lithium ion batteries	LF280K	896Wh	只有电池 Battery only

鉴定结论 Identification Conclusion

1. 危险性识别(Hazards identification)：第 9 类杂项危险物质/ class or division is 9。
2. 按照国际航空运输协会《危险品规则》办理类项(Suggestion according to IATA DGR)
   该物品满足包装说明 965 基本要求和第 IA 部分的规定。
   The goods meet the requirements in General Requirements and section IA of Packaging Instruction 965
   运输专用名称：锂离子电池 Proper shipping name: Lithium ion batteries
   UN NO.：UN 3480.
   危险类别：第 9 类 Class or division : 9
3. 包装要求(Packaging requirements)：
   根据包装说明 965-IA 部分办理，仅限货机。
   The goods are packaged according to the packaging instruction 965 section IA, Cargo Aircraft only.

   检验日期(Inspection date)：2023-02-10~2023-03-10
   签发日期(Valid date)：2023-03-16
   报告有效期(Period of validity)：2023-03-16~2023-12-31

广州海关技术中心 检验检测专用章 (16)

备注 Remark	每个包装件应贴有 9 类锂电池危险性标签和仅限货机标签。 Each package must be labelled with a Class 9-Lithium Battery hazard label and cargo aircraft only label.

批准 Approver：陆海强 审核 Checker：叶中轩 主检 Appraiser：刘凤超

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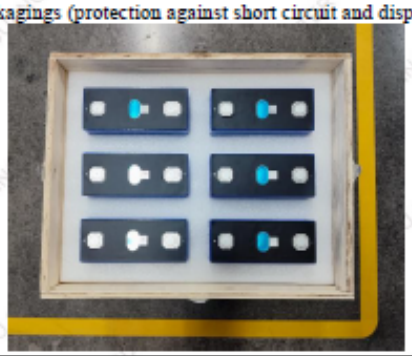
货物运输条件鉴定书

Certification for Safe Transport of Goods

图片/Photo
包装正面外观 Front appearance of Packaging 
包装侧面外观 Side appearance of Packaging 
内包装（防止短路，防移位保护措施） Inner packagings (protection against short circuit and displacement) 
UN 号，包装等级，9A 号标签，仅限货机标签 UN NO., packing group, 9A label, Cargo aircraft only label 

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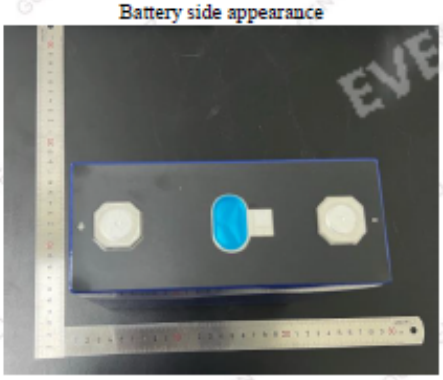
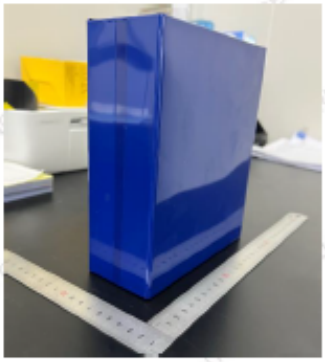
No: 01112300000542-6(E)
Date: 2022-03-16

货物运输条件鉴定书
Certification for Safe Transport of Goods

图片/Photo	
电池正面外观 Battery front appearance 	电池侧面外观 Battery side appearance 
电池侧面外观 Battery side appearance 	电池铭牌(含 Wh) Battery nameplate (with Wh) 

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货物运输条件鉴定书

Certification for Safe Transport of Goods

序号 No.	检查结果及其他事项 Inspection results and other things
1	客户声明 Consignor announcement： 本报告所述锂电池无明显安全缺陷，不属于因安全原因召回的锂电池； Lithium cells and batteries listed in this report have no significant defect, and they are not the defective cells or batteries returned to the manufacturer for safety reasons. 本报告所述锂电池不进行以回收或处置为目的的航空运输，不属于废弃锂电池； Lithium cells and batteries listed in this report are not waste lithium cells or batteries, and they will not be shipped for recycling or disposal from air transport. 本报告所述锂电池按照《危险品规则》3.9.2.6.1(e)规定的质量管理体系进行制造。 Lithium cells and batteries listed in this report were manufactured under the quality management programmer as described in DGR 3.9.2.6.1(e). 提供用于空运的锂电池所带的电量不可超过额定容量的 30% Lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design.
2	本报告所述锂电池已通过联合国《试验和标准手册》第 III 部分 38.3 小节相应测试要求（证书编号：01112300000542-1(E), UN38.3 试验概要：01112300000542-2(E)）。 Lithium cells and batteries listed in this report are of the types proven to meet the requirements of each applicable test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3(Test Report No.: 01112300000542-1(E), UN38.3 test summary：01112300000542-2(E)). 包装件的净数量不超过 35kgPackages of net quantity not exceeding 35kg
3	锂电池完全封装在内包装内，位于坚固的外包装中，电池具有适当的防短路措施。 Lithium cells and batteries are packed in inner packaging's that completely enclose the cell or battery and placed in a strong outer packaging. Cells and batteries are properly protected to prevent short circuits.
4	电池芯和电池不可与第 1 类爆炸品（1.4S 项除外），2.1 项易燃气体，第 3 类易燃液体，4.1 项易燃固体或 5.1 项氧化性物质的危险品放入同一个外包装中。 Cells and batteries must not be packed in the same outer packaging with dangerous goods classified in Class 1 (explosives) other than Division 1.4S, Division 2.1 (flammable gases), Class 3 (flammable liquids), Division 4.1 (flammable solids) or Division 5.1 (oxidizers). 电池芯和电池的包装件不可与第 1 类爆炸品（1.4S 项除外），2.1 项，第 3 类，4.1 项或 5.1 项危险品的包装件放入同一个 Overpack 中。 Packages containing cells or batteries must not be placed in an overpack with packages containing dangerous goods classified in Class 1 other than Division 1.4S, Division 2.1 , Class 3, Division 4.1 or Division 5.1.
5	电池重量大于等于 12 kg 并有坚固耐冲击的外壳，并且装在保护性外壳中（例如木板箱）可以运输并且不受第六章的管制，如果有产地国的豁免。豁免文件必须放在货物当中。 Batteries with a weight of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packaging's or protective enclosures (e.g. in fully enclosed or wooden slated crates) not subject to the requirements of Section 6 of these Regulation, if approved by the appropriate authority of the State of origin. A copy of the document of approval must accompany the consignment
6	2011 年 12 月 31 日后制造的电池要在外包装上标明瓦时-小时的额定值。 Batteries manufacture after 31 December 2011 must be marked with the Watt-hour rating on outside case.
备注 Remark	适用于空运。 Be applicable to transport by air.

（十一）LF280KV3电芯MSDS认证证书

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GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER
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No: 01112300000542-5(E)
Date: 2023-03-16

材料安全数据表
Material Safety Data Sheet

样 品 名 称： 锂离子电池

Sample Name: Lithium-ion battery

委 托 单 位： 湖北亿纬动力有限公司

Applicant: EVE POWER Co., Ltd.

WEJUQ5YFLL

广州海关技术中心
检验检测专用章
(16)

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材料安全数据表
Material Safety Data Sheet

1. 化学品及企业标识 Chemical Product And Company Identification	
货物名称 Goods name	锂离子电池 Lithium-ion battery
样品型号 Sample Model	LF280K
委托单位 Applicant	湖北亿纬动力有限公司 EVE POWER Co., Ltd.
委托单位地址 Applicant Address	荆门高新区·掇刀区荆南大道 68 号 NO.68, Jingnan Avenue, Hi-tech Zone, Duodao District, Jingmen, Hubei
生产单位 Manufacture	江苏亿纬林洋储能技术有限公司 EVE-Linyang Energy Storage Technology Company Limited
生产单位地址 Manufacture Address	江苏省启东市经济开发区华石路 608 号 No. 608, Huashi Road, Qidong Economic Development Zone, Jiangsu Province
应急电话 Emergency telephone call	+86-1585122 5880
电子邮箱 E-mail	080947@evebattery.com
2. 危险性概述 Hazards Identification	
物品危险分类 Hazard label	 9类锂电池 Class 9- Lithium batteries
爆炸危险性 Explosive risk	该物品不属于爆炸危险品 This article does not belong to the explosion dangerous goods
易燃危险性 Flammable risk	该物品不属于易燃危险品 This article does not belong to the flammable material
氧化危险性 Oxidation risk	该物品不属于氧化危险品 This article does not belong to the oxidation of dangerous goods
毒害危险性 Toxic risk	该物品不属于毒害危险品 This article does not belong to the toxic dangerous goods
放射危险性 Radioactive risk	该物品不属于放射危险品 This article does not belong to the radiation of dangerous goods
腐蚀危险性 Mordant risk	该物品不属于腐蚀危险品 This article does not belong to the corrosion of dangerous goods
其他危险性 other risk	该电池属于锂离子电池 Product belong to the Lithium ion batteries