



**Technical Report No.: 68.280.14.321.05**

**Rev. 01**

**Dated 2015-09-11**

Client: Name: EVE Energy Co.,Ltd  
Address: NO.36,Hui Feng 7th Road, Zhongkai Hi-Tech Zone, 516006  
Huizhou, Guangdong, PEOPLE'S REPUBLIC OF CHINA  
Contact person: Zhang Depeng

Manufacturing place: Manufacturer's name: EVE Energy Co.,Ltd  
Address: NO.36,Hui Feng 7th Road, Zhongkai Hi-Tech Zone, 516006  
Huizhou, Guangdong, PEOPLE'S REPUBLIC OF CHINA

Factory's name: EVE Energy Co.,Ltd  
Address: NO.36,Hui Feng 7th Road, Zhongkai Hi-Tech Zone, 516006 Hui-  
zhou, Guangdong, PEOPLE'S REPUBLIC OF CHINA

Test subject: Product: Battery

Type: ER26500, ER341245, CR123A, ER14505, SPC1520+ER18505,  
SPC0920+2\*ER14250, SPC0920

Test specification: EN 60079-0:2012 (Partial)  
EN 60079-11:2012 (Partial)

Purpose of examination:

- inspection according to specified requirements to realize the conformity with the Produktsicherheitsgesetz –ProdSG, version Nov 08, 2011
- inspection according to specified requirements to realize the observance of the protection aims of the following EC directives:
  - LVD directive 2006/95/EC
  - EMC directive 2004/108/EC
- Test according to the test specification

Test result: See table 1 on page 3

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## 1 Description of the test subject

### 1.1 Function

Manufacturer's specification for intended use:  
(According to the user manual)

Manufacturer's specification for predictive misuse:  
(According to the user manual)  
(Combination with other products)

### 1.2 Consideration of the foreseeable misuse

- Not applicable  
 Covered through the applied standard  
 Covered by the following comment  
 Covered by attached risk analysis

### 1.3 Technical Data

Product name	Type/model	Nominal voltage (V)	Nominal capacity (Ah)	Weight (g)	Dimension (mm)
Lithium-Thionyl Chloride battery	ER26500	3.6	4.0	Approx. 52	Max. Ø26.2 x 50.0
Lithium-Thionyl Chloride battery	ER341245	3.6	35	Approx. 195	Max. Ø33.1 x 124.5
Lithium Manganese Dioxide Cell	CR123A	3.0	1.5	Approx. 20	Max. Ø17.0 x 34.5
Lithium-Thionyl Chloride battery	ER14505	3.6	2.7	Approx. 19	Max. Ø14.5 x 50.5
Battery	SPC1520+ER18505	3.6	-	Approx. 34	-
Battery	SPC0920+2*ER14250	3.6	-	Approx. 24	-
Super pulse capacitor Cell	SPC0920	3.6	-	Approx. 3.5	Max. Ø9.0x 21.0

## 2 Order

### 2.1 Date of Purchase Order, Customer's Reference

2014-10-27

### 2.2 Receipt of Test Sample, Location

Samples were received on 2015-01-03, COM-BAT department, Shenzhen.

### 2.3 Date of Testing

2015-01-22 to 2015-02-12



## 2.4 Location of Testing

TÜV SÜD Certification and Testing(China) Co., Ltd. Shenzhen Branch  
No.11, Jukeng Rd., Juling Village, Jutang District, Guanlan, Longhua New District,  
518110 Shenzhen, P.R. China

## 3 Test Results

According to Clause 10.5 of EN 60079-11:2012:

Ten test samples is subjected to the most onerous of the short-circuit test until discharged.

- The resistance of the short-circuit link, excluding connections to it, either shall not exceed  $3\text{m}\Omega$  or have a voltage drop across it not exceeding  $200\text{mV}$  or  $15\%$  of the cell e.m.f.
- Before short-circuit, the open voltage of each batteries/cells is measured.
- During short-circuit, short-circuit current of each batteries/cells is measured.
- During short-circuit, the maximum surface temperature is recorded by a thermal couple.
- After short-circuit, the test samples is placed over a piece of blotting paper for a period of at least 12h to observe electrolyte leakage
- Five samples are tested at ambient temperature  $(20\pm 5)^\circ\text{C}$ , five samples are tested at ambient temperature  $(60\pm 5)^\circ\text{C}$ .
- Resistance of the short-circuit link: less than  $3\text{m}\Omega$
- Internal resistance is calculated by s-c voltage divided s-c current.

The results are listed in below table 1:

**Table 1:**

Model	Max. Open-circuit voltage (V)	Max. Short-circuit current (A)	Max. Surface temperature( $^\circ\text{C}$ )		Min. Internal resistance ( $\Omega$ )
			Test at ambient $(20\pm 5)^\circ\text{C}$	Test at ambient $(60\pm 5)^\circ\text{C}$	
ER26500	3.6765	4.30	94.1	108.7	0.8550
ER341245	3.6804	7.58	100.7	102.8	0.4855
CR123A	3.2521	22.68	103.3	100.6	0.1434
ER14505	3.6785	2.27	92.7	102.0	1.6205
SPC1520+E R18505	3.6696	32.95	101.6	108.9	0.1114
SPC0920+2 *ER14250	3.6795	15.81	83.6	109.0	0.2327
SPC0920	3.6678	100.58	103.9	102.5	0.0365

Remark: there is no visible sign of electrolyte on the blotting paper or on the external surfaces of the test samples.



## 4 Remark

### 4.1 Remarks to Factory

The assembly of the product has to comply with the documentation (CDF). Before the implementation of safety relevant modifications to the product into the ongoing production the product must be retested for assessment. The results must be implemented to the documentation and if necessary the certificate must be updated.

The final inspections in the production are described in IEC62133:2002.(If applicable)

**4.2** The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

**4.3** When the product is placed on the market, it must be accompanied with safety instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance.

**4.4** According to the EU decision 768/2008/EC and German product safety law (ProdSG), the name and address of manufacturer (an EU-based importer or authorized representative if the manufacturer is not based in EU) shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on EU market. (If applicable)

**4.5** The manufacturer/Importer has to ensure the appliance conforms to EMC Directive 2004/108/EC. (If applicable)

**4.6** (for co-license project only) The co-license certificate application is based on the following main license certificate:

Certificate no.: N/A

Report no.: N/A

## 5 Documentation

User manual

## 6 Summary

Clause 10.5 tests for cells and batteries of EN 60079-11:2012 were conducted on 10 samples of each model. Test results including maximum surface temperature, maximum short circuit current, minimum internal resistance, were listed in Table 1 which can be used for determination of temperature class and assessing the spark ignition compliance in end product.

**TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch**  
**TÜV SÜD Group**

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