IECEX TEST REPORT EN/IEC 60079-0

Electrical equipment for explosive gas atmospheres
Part 0: General requirements

Report Number.....: 19ZCTS0920008LR

Tested by (+ signature).....: Kevin Yang

Approved by (+ signature): King Hu

Date of issue: Oct.08, 2019

Testing laboratory

Testing Laboratory Name: Shenzhen ZCT Technology Co.,Ltd.

Address.....: 3/F., Building 5, Hongsheng Industrial Zone, Bao'an Road,

Xixiang Street, Bao'an District, Shenzhen, Guangdong,

China.

Applicant's name.....: Titus Battery

Address.....: 291 N.Hubbards Lane, Suite 172-120, Louisville, KY 40207, USA

Manufactuer's name....: Wuhan Voltec Energy Sources Co., Ltd

Address.....: No.231, Xing San Road, Han Nan District, WuHan, HuBei

Standard..... EN 60079-0:2012/A11:2013

Test procedure.....: CE

Non-standard test method.....: N/A

Test item description.....: 3.6V Primary Lithium Thionyl Chloride High Energy

Trade Mark.....: N/A

Model/Type reference....: ER14250

Ratings....:: (5)

II M2 G Ex deia IIC T4

II M2 D Ex tD A21 T135 $^{\circ}$ C

Copy of marking plate

3.6V Primary Lithium Thionyl Chloride High Energy



II M2 G Ex deia IIC T4



II M2 D Ex tD A21 T135 $^{\circ}$ C

Model: ER14250 Batch No.:

I lain a marking the garage and was

Using ambient temperature:-55~85°C

Input:5VDC 50Hz 1A Output:DC3.6V 1.2A

Titus Battery 291 N.Hubbards Lane, Suite 172-120, Louis ville, KY 40207, USA

ER14250

Summary of testing:

Test performed in accordance with all of the clauses of according IEC 60079-0

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 Sept.18, 2019

Date(s) of performance of test : Sept.18, 2019 to Oct.08, 2019

General remarks:

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 testing laboratory.

"(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.

Determination of the test result includes consideration of measurement uncertainty from the test equipment and methods.

This test report includes:

Annex I: Photo documentation, 2 pages

General product information:

3.6V Primary Lithium Thionyl Chloride High Energy,

Models:/

| | IEC 60079-0 | | |
|---------|--|--------|---------|
| CI. | Requirement – Test | Result | Verdict |
| 1 | SCOPE | | |
| 2 | NORMATIVE REFERENCES | | |
| 3 | TERMS AND DEFINITIONS | | |
| 4 | CONSTRUCTIONAL REQUIREMENTS FOR ALL ELECTRICAL APPARATUS | | Pass |
| 4.1 | General | | Pass |
| 4.2 | Electrical connections | , | ' |
| 4.2.1 | General | | |
| | The circuits of handlamp are permanent connection. | | Pass |
| | All conductors firmly installed. | | Pass |
| | The power supply of it is battery. The circuits are protected by "ib"(except the battery). | | Pass |
| | For the rechargeable battery of A-1280, the charge circuit is not working during the normal working condition. | | Pass |
| | And it only can be charged in safety area. | | Pass |
| 4.2.2 | Field wiring connections | , | • |
| 4.2.2.1 | General | | |
| | The circuits of handlamp are permanent connection. The power supply of it is battery. N/A 4.2.2.2 | | Pass |
| | Connections made using terminals complying with IEC 60947-7-1, IEC 60947-7-2, IEC 60999-1, or IEC 60999-2 | | Pass |
| | The circuits of handlamp are permanent connection. | | Pass |
| | The power supply of it is battery. N/A 4.2.2.3 Field wiring connection facilities integral to "e" apparatus or components The circuits of handlamp are permanent connection. | | Pass |
| | The power supply of it is battery. | | N/A |
| 4.2.2.4 | Connections designed to be used with cable lugs and similar devices | | Pass |
| | The circuits of handlamp are permanent connection. | | Pass |

| | IEC 60079-0 | | |
|---------|--|---|---------|
| CI. | Requirement – Test | Result | Verdict |
| | The power supply of it is battery. N/A | | |
| 4.2.2.5 | Connections using permanent arrangements The circuits of handlamp are permanent connection. | | Pass |
| | The power supply of it is battery. | | N/A |
| 4.2.3 | Factory connections | | |
| 4.2.3.1 | General | The circuits of handlamp are factory connections. | |
| | The power supply of it is battery. | | Pass |
| 4.2.3.2 | Field wiring connection methods used for factory connections | | |
| | Spring tabs are used to connect the circuit and battery. | | N/A |
| | They should not be opened in hazardous areas, see the warning words. | | Pass |
| 4.2.3.3 | Permanent connections All the permanent connections are weld. Pass | | N/A |
| 4.2.3.4 | Pluggable connections Pluggable connections are not included. | | N/A |
| 4.2.3.5 | Terminal bridging connections | | |
| | Terminal bridging connections are not included. | | N/A |
| 4 | APPARATUS GROUPING AND TEMPERATURE CLASSIFICATION | | 1 |
| 4.1 | Group I | | N/A |
| 4.2 | Group II | IIC | Pass |
| 4.3 | Group III | IIIA | Pass |
| 4.4 | Equipment for a particular explosive atmosphere | No particular explosive atmosphere considered. | N/A |
| 5 | TEMPERATURES | · · · · · · · · · · · · · · · · · · · | 1 |
| 5.1 | Environmental influences | | Pass |
| 5.1.1 | Ambient temperatures | -15°C≤Ta≤+40°C. | Pass |
| 5.1.2 | External source of heating or cooling | No external source of heating or cooling. | N/A |

| | IEC 60079-0 | | |
|-----------|--|---|---------|
| CI. | Requirement – Test | Result | Verdict |
| 5.2 | Service temperature | Using maximum surface temperature instead of maximum service temperature is approved by the manufacturer. See 26.5.1.3. | Pass |
| 5.3 | Maximum surface temperature | | Pass |
| 5.3.1 | Determination of maximum surface temperature | Refer to Cl. 26.5.1 in test report IEC60079-0 for determination of maximum surface temperature. | Pass |
| 5.3.2 | Limitation of maximum surface temperature | | Pass |
| 5.3.2.1 | Group I electrical equipment | Group II and Group III | N/A |
| 5.3.2.2 | Group II electrical equipment | Refer to Cl. 26.5.1 in test report IEC60079-0. | Pass |
| 5.3.2.3 | Group III electrical equipment | Refer to Cl. 26.5.1 in test report IEC60079-0 | Pass |
| 5.3.2.3.1 | Maximum surface temperature determined without a dust layer | Refer to Cl. 26.5.1 in test report IEC60079-0 | Pass |
| 5.3.2.3.2 | Maximum surface temperature with respect to dust layers | Db equipment | N/A |
| 5.3.3 | Small component temperature for Group I or Group II electrical equipment | No small components. | N/A |
| 6 | REQUIREMENTS FOR ALL ELECTRICAL EQUIPMENT | | - |
| 6.1 | General | The samples comply with the requirements of IEC 60079-0, IEC60079-7, IEC60079-11 and IEC60079-31. | Pass |
| 6.2 | Mechanical strength of equipment | Refer to Cl. 26.4 in test report IEC60079-0. See 26.5.1.3. | Pass |
| 6.3 | Opening times | | N/A |
| 6.4 | Circulating currents | No circulating currents. | N/A |
| 6.5 | Gasket retention | A rubber ring is made of silicon between lamp head and enclosure. The rubber ring is in the groove of the enclosure. | Pass |

| | IEC 60079-0 | | |
|-------|--|--|---------|
| CI. | Requirement – Test | Result | Verdict |
| | | 2. A rubber ring is made of silicon between lamp head and glass plate. The rubber ring is pressed by locking ring. | |
| 6.6 | Electromagnetic and ultrasonic energy radiating equipment | No electromagnetic and ultrasonic energy radiating equipment | N/A |
| 6.6.1 | Radio frequency sources | | N/A |
| 6.6.2 | Lasers or other continuous wave sources | | N/A |
| 6.6.3 | Ultrasonic sources | | N/A |
| 7 | NON-METALLIC ENCLOSURES AND NON-METALLIC PARTS OF ENCLOSURES | | Pass |
| 7.1 | General | | Pass |
| 7.1.1 | Applicability | The enclosure and rubber rings comply this clause. | Pass |
| 7.1.2 | Specification of materials | The manufacture documents show the detail of the non-metallic materials. | Pass |
| 7.1.3 | Plastic materials | The enclosure is made of PC. Its type is PP. RTI value of it is 105°C. | Pass |
| 7.1.4 | Elastomeric materials | The rubber rings are made of silicon rubber. The long time working temperature of it is -100 °C~+250 °C 。 | Pass |
| 7.2.1 | Tests for thermal endurance | See clause 26.8 and 26.9 in this report. | Pass |
| 7.2 | Thermal endurance | | Pass |
| 7.2.2 | Material selection | The COT of the sealing strip and RTI of the enclosure is 20K higher than the maximum operating temperature. Refer to Clause 26.5, 7.1.3 and 7.1.4. | Pass |
| 7.3 | Resistance to light | Resistance to light was carried out according to clause 26.10. | Pass |

| | IEC 60079-0 | | |
|-------|---|--|---------|
| CI. | Requirement – Test | Result | Verdict |
| 7.4 | Electrostatic charges on external non-metallic materials | | Pass |
| 7.4.1 | Applicability | The enclosure is made by PC. | Pass |
| 7.4.2 | Avoidance of a build-up of electrostatic charge on Group I or Group II electrical equipment | The surface resistance is tested on the parts of enclosure and carried out according to clause 26.13. The surface resistance is $3.0 \times 101\Omega$, less than 109Ω . | Pass |
| 7.4.3 | Avoidance of a build-up of electrostatic charge on equipment for Group III | No using plastic which is covered by conductive material. | Pass |
| 7.5 | Threaded holes | Only metric thread holes included. The thread holes are compatible with the plastic material of the enclosure. | Pass |
| 8 | METALLIC ENCLOSURES AND METALLIC PARTS OF ENCLOSURES | | N/A |
| 8.1 | Material Composition | The enclosure is made of PC. | N/A |
| 8.1.1 | Group I | The enclosure is made of PC. | N/A |
| 8.1.2 | Group II | The enclosure is made of PC. | N/A |
| 8.1.3 | Group III | The enclosure is made of PC. | N/A |
| 8.2 | Threaded Holes | | N/A |
| 9 | FASTENERS | | N/A |
| 9.1 | General | Fasteners are not included. | N/A |
| 9.2 | Special fasteners | Fasteners are not included. | N/A |
| 9.3 | Holes for special fasteners | Fasteners are not included. | N/A |
| 9.3.1 | Thread engagement | Fasteners are not included. | N/A |
| 9.3.2 | Tolerance and clearance | Fasteners are not included. | N/A |
| 9.3.3 | Hexagon socket set screw | Fasteners are not included. | N/A |
| 10 | INTERLOCKING DEVICES | No interlocking devices | N/A |
| 11 | BUSHINGS | No bushings | N/A |
| 12 | MATERIALS USED FOR CEMENTING | Cemented joints are not included. | N/A |
| 13 | EX COMPONENTS | Ex components are not included. | N/A |
| 13.1 | General | | N/A |

| | IEC 60079-0 | | |
|--------|---|--|---------|
| CI. | Requirement – Test | Result | Verdict |
| 13.2 | Mounting | | N/A |
| 13.3 | Internal Mounting | | N/A |
| 13.4 | External Mounting | | N/A |
| 14 | CONNECTION FACILITIES AND TERMINAL COMPARTMENTS | | |
| 14.1 | General | The power supply of Explosion Proof Handlamp is battery. | N/A |
| 14.2 | Termination compartment | | N/A |
| 14.3 | Type of protection | | N/A |
| 14.4 | Creepage and clearance | | N/A |
| 15 | ONNECTION FACILITIES FOR EARTHING OR BONDING CONDUCTORS | | N/A |
| 15.1 | Equipment requiring earthing | Portable equipment | N/A |
| 15.1.1 | Internal | Portable equipment | N/A |
| 15.1.2 | External | Portable equipment | N/A |
| 15.2 | Equipment not requiring earthing | Portable equipment with plastic enclosure | Pass |
| 15.3 | Size of conductor connection | Portable equipment | N/A |
| 15.4 | Protection against corrosion | Portable equipment | N/A |
| 15.5 | Secureness of electrical connections | Portable equipment | N/A |
| 16 | ENTRIES INTO ENCLOSURES | | N/A |
| 16.1 | General Portable equipment with battery power supply | Portable equipment with battery | N/A |
| 16.2 | Identification of entries | Portable equipment with battery power supply | N/A |
| 16.3 | Cable glands power supply | | N/A |
| 16.4 | Blanking elements | Portable equipment with battery power supply | N/A |
| 16.5 | Temperature at branching point and entry point | Portable equipment with battery power supply | N/A |
| 16.6 | Electrostatic charges of cable sheaths | Portable equipment with battery power supply | N/A |
| 17 | SUPPLEMENTARY REQUIREMENTS FOR ROTATING ELECTRICAL MACHINES | | N/A |
| 17.1 | Fans and fan hoods | No rotating electrical machines. | N/A |

| | IEC 60079-0 | | |
|--------|--|--|---------|
| CI. | Requirement – Test | Result | Verdict |
| 17.2 | Ventilation openings for external fans | No rotating electrical machines. | N/A |
| 17.3 | Construction and mounting of the ventilation systems | No rotating electrical machines. | N/A |
| 17.4 | Clearances for the ventilating systems | No rotating electrical machines. | N/A |
| 17.5 | Materials for external fans and fan hoods | No rotating electrical machines. | N/A |
| 17.6 | Equipotential bonding conductors Flammable dielectric | No rotating electrical machines. | N/A |
| 18 | SUPPLEMENTARY REQUIREMENTS FOR SWITCHGEAR | | N/A |
| 18.1 | Flammable dielectric | Switchgear is not included. | |
| 18.2 | Disconnectors | No disconnectors. | N/A |
| 18.3 | Group I – Provisions for locking | Group II. | |
| 18.4 | Doors and covers | Doors and covers are not included. | N/A |
| 19 | SUPPLEMENTARY REQUIREMENTS FOR FUSES | The fuse is protected by "ib". The Explosion Proof Handlamp should not be opened in hazardous areas. | N/A |
| 20 | SUPPLEMENTARY REQUIREMENTS FOR PLUGS, SOCKETS OUTLETS AND CONNECTORS | | N/A |
| 20.1 | Interlocking | No plugs, sockets outlets and connectors. | N/A |
| 20.1.1 | Explosive gas atmospheres | No plugs, sockets outlets and connectors. | N/A |
| 20.1.2 | Explosive dust atmospheres | No plugs, sockets outlets and connectors. | N/A |
| 20.2 | Energized plugs | | N/A |
| 21 | Supplementary Requirement for Luminaires | | Pass |
| 21.1 | General | A glass plate is provided to protect the light source. For the impact test, See clause 26.4.2 | Pass |

| | IEC 60079-0 | | |
|-------|---|--|---------|
| CI. | Requirement – Test | Result | Verdict |
| 21.2 | Covers for luminaires of EPL Gb or EPL Db | The enclosure should not be opened in hazardous area. | Pass |
| 21.3 | Covers for luminaires of EPL Gc or EPL Dc | No plugs, sockets outlets and connectors. | N/A |
| 21.4 | Special lamps | Gb and Db equipment No special lamp. | N/A |
| 22 | SUPPLEMENTARY REQUIREMENTS FOR CAPLIGHTS AND HANDLIGHTS | | N/A |
| 22.1 | Group I caplights | Group II and III equipment. | N/A |
| 22.2 | Group II and Group II caplights and handlights | No leakage at all working directions. | Pass |
| 23 | APPARATUS INCORPORATING CELLS AND BATTERIES | | N/A |
| 23.1 | General | | N/A |
| 23.2 | Batteries | | N/A |
| 23.3 | Cell types | | N/A |
| 23.4 | Cells in a battery | | N/A |
| 23.5 | Ratings of batteries | | N/A |
| 23.6 | Interchangeability | | N/A |
| 23.7 | Charging of primary batteries | | N/A |
| 23.8 | Leakage | | N/A |
| 23.9 | Connections | | N/A |
| 23.10 | Orientation | | N/A |
| 23.11 | Replacement of cells or batteries | | N/A |
| 23.12 | Replaceable battery pack | | N/A |
| 24 | DOCUMENTATION | Relevant documentation provided by the manufacturer has been assessed. | Pass |
| 25 | COMPLIANCE OF PROTOTYPE OR SAMPLE WITH DOCUMENTS | | Pass |
| 26 | TYPE TESTS | | |
| 26.1 | General | Tests were carried out according to IEC 60079-0, IEC 60079-1, IEC 60079-7, IEC60079-11 and IEC 60079-31. | Pass |

| | IEC 60079-0 | | |
|------------|--|--|---------|
| CI. | Requirement – Test | Result | Verdict |
| 26.2 | Test configuration | Tests were carried out under the most unfavorable conditions. | Pass |
| 26.3 | Tests in explosive test mixtures | The equipment is protected by "e", "ib" and "t". | N/A |
| 26.4 | Tests of enclosures | | |
| 26.4.1 | Order of tests | | Pass |
| 26.4.1.1 | Metallic enclosures, metallic parts of enclosures and glass of parts of enclosures | The enclosure of this product is made by non-metallic material. | Pass |
| 26.4.1.2 | Non-metallic enclosures or non-metallic parts of enclosures | See cluase 26.4.1.2.2 | Pass |
| 26.4.1.2.1 | Group I electrical equipment | Group II and Group III | N/A |
| 26.4.1.2.2 | Group II and Group III electrical equipment | 2 samples were submitted to the tests according to the following sequence: 1. Thermal endurance to heat 2. Thermal endurance to cold 3. Impact test 4. Drop test 5. IP test(the cover was opened and re-closed before IP test) 6. Any other tests specific to the type of protection concerned | Pass |
| 26.4.2 | Resistance to impact | carried out on three glass plate samples. Impact once at each sample. The impact energy is 7J. At the ambient temperature of 24°C, test was | Pass |

| | IEC 60079-0 |) | |
|----------|---|---|---------|
| CI. | Requirement – Test | Result | Verdict |
| | | Impact tests for the enclosure were carried out on two | |
| | | samples. Impact once at two different positions on each sample at 69°C respectively with 7J impact energy; then impact once at two different | |
| | | positions on each sample at -20°C | |
| 26.4.3 | Drop test | The drop test was carried out at the temperature of -15. The battery was connected to the test sample. The position of the sample for the drop test is the most unfavorable condition. respectively with 7J impact energy | Pass |
| 26.4.4 | Acceptance criteria | No damage affecting the explosion-proof performance has been found. | Pass |
| 26.4.5 | Degree of protection (IP) by enclosures | | Pass |
| 26.4.5.1 | Test procedure | The test procedure is according to IEC60529. | Pass |
| 26.4.5.2 | Acceptance criteria | The protection degree is IP66. No ingress of dust or water after tests for degree of protection by enclosure. | Pass |
| 26.5 | Thermal tests | | Pass |
| 26.5.1 | Temperature measurement | | Pass |
| 26.5.1.1 | General | The Portable emergency lighting system is vertically upward during temperature measurement. The AT-1080 and AT1280 was chosen as the test samples. | Pass |

| | IEC 600 | 079-0 | |
|----------|-----------------------------|---|---------|
| CI. | Requirement – Test | Result | Verdict |
| 26.5.1.2 | Service temperature | Using maximum surface temperature instead of maximum service temperature is approved by the manufacturer. See 26.5.1.3. | Pass |
| 26.5.1.3 | Maximum surface temperature | The measuring devices are arranged that they do not significantly affect the thermal behaviour of the electrical apparatus. | Pass |
| | | The temperature rise for different positions of the sample are as follow: | |

Table 26.5.1.3 Maximum surface temperature

| Position | Temperature rise(K) | Verdict |
|---------------|---------------------|---------|
| Enclosure(PC) | 14 | Р |
| Glass plate | 12 | Р |
| Rubber ring | 12 | Р |

| | For the temperature rise of PCB, see report in | | Pass |
|----------|--|--|------|
| | EN 60079-11. Under the ambient temperature 40°C, the | | |
| | maximum temperature is 56°C. | | |
| | The temperature class of product complies with T4. | | |
| 26.5.2 | Thermal shock test | The test was carried out on glass plate. | Pass |
| | | The temperature of glass plate | |
| | | is 56(at ambient temperature | |
| | | 40°C). | |
| | | Water was sprayed the on | |
| | | glass plate at 10°C, and the | |
| | | glass plate was not | |
| 26.5.3 | Small component ignition test (G | roup I and Group II) broken. | N/A |
| 26.5.3.1 | Conoral | The components on PCB | N/A |
| | General | comply with T4 | |
| 26.5.3.2 | Procedure | The components on PCB comply with T4 | N/A |

| | IEC 60079-0 | | |
|----------|---|---|---------|
| CI. | Requirement – Test | Result | Verdict |
| 26.5.3.3 | Acceptance criteria | The components on PCB comply with T4 | N/A |
| 26.6 | Torque test for bushings | | N/A |
| 26.6.1 | Test procedure | No bushings. | N/A |
| 26.6.2 | Acceptance criteria | No bushings. | N/A |
| 26.7 | General | | Pass |
| 26.7.1 | Non-metallic enclosures or non-metallic parts of enclosures | | Pass |
| 26.7.2 | Test temperatures | For the upper temperature of the non-metallic parts, the maximum service temperature increased by 10K; for the lower temperature of the non-metallic parts, the maximum service temperature reduced by 5K (refer to Clause 26.5 for temperature measurement). | Pass |
| 26.8 | Thermal endurance to heat | The samples were stored for 28 days at 90% relative humidity at a temperature of 80°C. | |
| 26.9 | Thermal endurance to cold | The sample was stored for 24 Pass hours at a temperature of -20°C. | |
| 26.10 | Resistance to light | Tests were carried out Pass according to the standard. | |
| 26.10.1 | Test procedure | Size of test bars: 80mm×10mm×4mm; number of test bars: 12; temperature of black panel: (65 ±3)°C; exposure time: 1000h. | Pass |

| IEC 60079-0 | | | |
|-------------|---|---|---------|
| CI. | Requirement – Test | Result | Verdict |
| 26.10.2 | Acceptance criteria | The impact bending strength following exposure in the case of an impact on the exposed side shall be at least 50% of the corresponding value measured on the unexposed test pieces. | Pass |
| 26.11 | Resistance to chemical agents for Group I electrical equipment Earth continuity | Group II and Group III | N/A |
| 26.12 | Earthing is not included. | | N/A |
| 26.13 | of parts of enclosures of non-metallic materials Surface resistance test of parts | enclosure and carried out according to the standard. The surface resistance is 3.0×103 The surface resistance is tested on the parts of Ω ,less than 109Ω . | Pass |
| 26.14 | Introduction | This test is not required. | N/A |
| 26.14.1 | Charging tests | | N/A |
| 26.14.2 | Principle of the test | This test is not required. | N/A |
| 26.14.3 | Samples and test apparatus | This test is not required. | N/A |
| 26.14.4 | Ambient conditions | This test is not required. | N/A |
| 26.14.5 | Conditioning | This test is not required. | N/A |
| 26.14.6 | Determination of the most efficient | charging method | N/A |
| 26.14.6.1 | Method A: Rubbing with a pure polyamide cloth | This test is not required. | N/A |
| 26.14.6.2 | Method B: Rubbing with a cotton cloth | This test is not required. | N/A |
| 26.14.6.3 | Method C: Charging by influence with a d.c. high-voltage power supply | This test is not required. | N/A |
| 26.14.7 | Assessment of discharge | This test is not required. | N/A |
| 26.15 | Test procedure | This test is not required. | N/A |
| 26.15.1 | Measurement of capacitance | | N/A |
| 26.15.2 | Acceptance criteria | This test is not required. | N/A |

| IEC 60079-0 | | | |
|-------------|---|---|---------|
| CI. | Requirement – Test | Result | Verdict |
| 27 | Routine tests | The Portable emergency lighting system was submitted to specifications of power-frequency withstand voltage test. Test voltage: 2500V. Duration: 1min, No insulation breakdown, flashover, leakage current increasing obviously or voltage dropping suddenly etc. | Pass |
| 28.1 28 | Conformity with the documentation MANUFACTURER'S RESPONSIBILITY | phenomena. Refer to the document provided by the The manufacturer carries out the verifications or tests. The sample conforms to the | Pass |
| 28.2 | Certificate | documentation. The samples comply with the requirements of IEC 60079-0, IEC 60079-11, IEC60079-31. | Pass |
| 28.3 | Responsibility for marking | The Portable emergency lighting system is designed and manufactured, assessed and tested according to IEC 60079-0, IEC 60079-7, IEC 60079-11, IEC 60079-31. The sample complies with the document. Refer to Cl. 29 for the content of nameplate. | Pass |
| 29 | MARKING | The nameplate complies with the requirements of IEC60079-0, IEC600797, IEC 6007911 and IEC60079-31. | Pass |
| 29.1 | Location | The nameplate made of SUS304 is fixed on the handle of the enclosure with 4 rivets. | Pass |
| 29.2 | General | | Pass |

| IEC 60079-0 | | | |
|-------------|--|--|---------|
| CI. | Requirement – Test | Result | Verdict |
| 29.3 | Ex marking for explosive gas atmospheres | Ex e ib IIC T4Gb For the nameplate, see cover of this report. | Pass |
| 29.4 | Ex marking for explosive dust atmospheres | Ex t IIIC T130°C Db IP66 | |
| 29.5 | Combined types of protection | There is two protection type "d" and "e". Protection type of the enclosure is "e", protection type of circuit is "ib". | Pass |
| 29.7 | Ga using two independent Gb types of protection | Only one Gb protection. | N/A |
| 29.6 | Multiple types of protection | Combined types of protection, see clause 29.5. | N/A |
| 29.8 | Ex components | | N/A |
| 29.9 | Small equipment and small Ex components | Ex components are not included. No small equipment and small Ex components | N/A |
| 29.10 | Extremely small equipment and extremely small Ex components | No extremely small equipment and extremely small Ex components. | N/A |
| 29.11 | Warning markings | The warning words are Paspecified in the nameplate. | |
| 29.12 | Alternate marking of equipment protection levels (EPLs) | No alternate marking. | N/A |
| 29.12.1 | Alternate marking of type of protection for explosive gas atmospheres | | N/A |
| 29.12.2 | Alternate marking of type of protection for explosive dust atmospheres | | N/A |
| 29.13 | Cells and batteries | | N/A |
| 30 | INSTRUCTIONS | | |

| IEC 60079-0 | | | |
|---------------------|--|---|---------|
| CI. | Requirement – Test | Result | Verdict |
| 30.1 | General | The instruction manual includes application range, model implication, compliances, working conditions, technical parameters, installation, usage and maintenance, outline and installation dimension, electric schematic diagram, transportation, storage and ordering information. | Pass |
| 30.2 | Cells and batteries | | N/A |
| Annex A (Normative) | SUPPLEMENTARY REQUIREMENTS FOR CABLE GLANDS | | N/A |
| A.1 | General No cable glands. | | N/A |
| A.2 | Constructional requirements | | |
| A.2.1 | Cable sealing No cable glands. | | N/A |
| A.2.2 | Filling compounds No cable glands. | | N/A |
| A.2.3 | Clamping | | |
| A.2.3.1 | General No cable glands. | | N/A |
| A.2.3.2 | Group II or Group III cable glands No cable glands. | | N/A |
| A.2.4 | Lead-in of cable | | |
| A.2.4.1 | Sharp edges No cable glands. | | N/A |
| A.2.4.2 | Point of entry No cable glands. | | N/A |
| A.2.5 | Released by a tool No cable glands. | | N/A |
| A.2.6 | Fixing | No cable glands. | N/A |
| A.2.7 | Degree of protection | No cable glands. | N/A |
| A.3 | Type tests | | |
| A.3.1 | Tests of clamping of non-armoured and braided cables | | N/A |
| A.3.1.1 | Cable glands with clamping by the sealing ring | No cable glands. | N/A |
| A.3.1.2 | Cable glands with clamping by the filling compound | No cable glands. | N/A |
| A.3.1.3 | Cable glands with clamping by means of a clamping device | No cable glands. | N/A |

Page 20 of 20

| IEC 60079-0 | | | |
|-------------|---|------------------|---------|
| CI. | Requirement – Test | Result | Verdict |
| A.3.1.4 | Tensile test | No cable glands. | N/A |
| A.3.1.5 | Mechanical strength | No cable glands. | N/A |
| A.3.2 | Tests of clamping of armoured cables | | N/A |
| A.3.2.1 | Tests of clamping where the armourings are clamped by a device within the gland | No cable glands. | N/A |
| A.3.2.1.1 | Tensile test | No cable glands. | N/A |
| A.3.2.1.2 | Mechanical strength | No cable glands. | N/A |
| A.3.2.2 | Tests of clamping where the armourings are not clamped by a device within the gland | No cable glands. | N/A |
| A.3.3 | Type test for resistance to impact | No cable glands. | N/A |
| A.3.4 | Test for degree of protection (IP) of cable glands | No cable glands. | N/A |
| A.4 | Marking | | |
| A.4.1 | Marking of cable glands | No cable glands. | N/A |
| A.4.2 | Marking of cable sealing rings | No cable glands. | N/A |
| Annex B | Table B.1- Clauses with which Ex components | | N/A |
| (Normative) | shall comply | | |

⁻ End of Test Report -