

CE TEST REPORT

Report No.: TST20230380248-1SR-XG-01

| Prepared For: | Zhongshan Harui Trading Co.,Ltd Room411,4FL,NO.14HUAXINGSQUARE,SHUNCHENGYILU,GUER ,ZHONGSHAN,GUANGDONG,CHINA |
|--------------------|---|
| Manufacturer: | Zhongshan Harui Trading Co.,Ltd Room411,4FL,NO.14HUAXINGSQUARE,SHUNCHENGYILU,GUER ,ZHONGSHAN,GUANGDONG,CHINA |
| Product Name: | EV Charger |
| Trade Mark: | N/A |
| Main Test Model: | HEEV-AC-7 |
| Additional Models: | HVCS-DP-7, HVCS-DP-11, HVCS-DP-22, HVCS-Q8-7S, HVCS-Q8-11S, HVCS-Q8-22S, HVCS-80-7, HVCS-Z2-7, HVCS-Z2-11, HVCS-Z2-22, HVCS-13-7S, HVCS-13-11S, HVCS-13-22S, HVCS-Z21-7S, HVCS-Z21-11S, HVCS-Z21-22S, HVCS-Z1-7, HVCS-Z1-11, HVCS-Z1-22, HVCS-MB-7, HVCS-MB-11, HVCS-MB-22, HVCS-MM-7S, HVCS-MM-11S, HVCS-MM-22S, HVCS-GD-7, HVCS-GD-7S, HEEV-AC-11, HEEV-AC-21, HEEV-AC-40 |
| Prepared By: | Dongguan True Safety Testing Co., Ltd. |
| | Room 201, No.20, East of Houjie Avenue, Houjie, Dongguan, Guangdong, China |
| Test Date: | Mar. 13, 2023 To Mar. 17, 2023 |
| Date of Report: | Mar. 17, 2023 |
| Report No.: | TST20230380248-1SR-XG-01 |



TEST REPORT

Report No.: TST20230380248-1SR-XG-01

EN 61851-1

Electric vehicle conductive charging system – Part 1: General requirements

| Testing laboratory | | | |
|---|--------------------------|--|--|
| Name | : Dongguan True Sa | afety Testing Co., Ltd. | |
| Address | Room 201, No.20 China | D, East of Houjie Avenue, Houjie, Dongguan, Guangdong, | |
| Testing location | Dongguan True S | Safety Testing Co., Ltd. | |
| Applicant | | | |
| Name | Zhongshan Harui | Trading Co.,Ltd | |
| Address | | O.14HUAXINGSQUARE,SHUNCHENGYILU,GUER,ZH ANGDONG,CHINA | |
| Test specification | | | |
| Standard | EN IEC 61851-1: | 2019 | |
| Test procedure | • | Compliance with: EN IEC 61851-1:2019 | |
| Procedure deviation. | N.A. | | |
| Non-standard test method | N.A. | | |
| Test item | | | |
| Description | EV Charger | | |
| Trademark | : N/A | | |
| Model and/or type reference | : HEEV-AC-7 | | |
| Manufacturer | Zhongshan Harui | Trading Co.,Ltd | |
| Address | | O.14HUAXINGSQUARE,SHUNCHENGYILU,GUER,ZH ANGDONG,CHINA | |
| Rating(s) | 220V~ 50-60Hz 3 | 32A 7KW | |
| Test case verdicts | • | | |
| Test case does not apply to the test object | : | N(.A.) | |
| Test item does meet the requirement | : | P(ass) | |
| Test item does not meet the requirement | : | F(ail) | |



General remarks

This test report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item tested.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

General product information:

Copy of marking plate

EV Charger

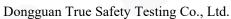
Model:HEEV-AC-7

Rating: 220V~ 50-60Hz 32A 7KW



Zhongshan Harui Trading Co.,Ltd.

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| | | <u>01, No.20, East of Houjie Avenue, Houjie, Do long, China</u> |
|--------------|-----------------------------------|---|
| Test by: | Signature Technician Title | Mar. 17, 2023 Date |
| Reported by: | Signature Project Engineer Title | Mar. 17, 2023 |
| Approved by: | Ander | Mar. 17, 2023 |
| | AndyZheng/Manager Name and Title | |



| | EN 61851-1 | | |
|--------|--|-----------------|---------|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 5 | Rating of the supply a.c. voltage | | Р |
| | The rated value of the a.c. supplied voltage for the charging equipment is up to 1 000 V. The equipment shall operate correctly within ±10 % of the standard nominal voltage. The rated value of the frequency is 50 Hz ± 1 % or 60 Hz ± 1 %. | 50/60Hz | Р |
| 6 | General system requirement and interface | | Р |
| 6.1 | General description | | Р |
| | One method for EV charging is to connect the a.c. supply network (mains) to an on-board charger. An alternative method for charging an EV is to use an off-board charger for delivering direct current. For charging in a short period of time, special charging facilities operating at high power levels could be utilized. | | Р |
| 6.2 | EV charging modes | | Р |
| | A residual current device with characteristics that are at least equivalent to type A as defined in IEC 61008-1 or IEC 61009-1, or IEC/TR 60755 in conjunction with an over-current protection device shall be required for all modes of charging | | Р |
| | Mode 1 charging: connection of the EV to the a.c. supply network (mains) utilizing standardized socket-outlets not exceeding 16 A and not exceeding 250 V a.c. single-phase or 480 V a.c. three-phase, at the supply side, and utilizing the power and protective earth conductors. | | N |
| | Mode 2 charging: connection of the EV to the a.c. supply network (mains) not exceeding 32 A and not exceeding 250 V a.c. single-phase or 480 V a.c. three-phase utilizing standardized single-phase or three-phase socket-outlets, and utilizing the power and protective earth conductors together with a control pilot function and system of personnel protection against electric shock (RCD) between the EV and the plug or as a part of the in-cable control box. The inline control box shall be located within 0,3 m of the plug or the EVSE or in the plug. | | P |



| | EN 61851-1 | | |
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| Clause | Requirement – Test | Result - Remark | Verdict |
| | Mode 3 charging: connection of the EV to the a.c. supply network (mains) utilizing dedicated EVSE where the control pilot function extends to control equipment in the EVSE, permanently connected to the a.c. supply network (mains). | | N |
| | Mode 4 charging: connection of the EV to the a.c. supply network (mains) utilizing an offboard charger where the control pilot function extends to equipment permanently connected to the a.c. supply. | | N |
| 6.3 | Types of EV connection using cables and plugs (cases A, B, and C) | | Р |
| 6.3.1 | General description | | Р |
| | The connection of EVs using cables may be carried out in one or more of three different ways: - Case "A" connection: the connection of an EV to the a.c. supply network (mains) utilizing a supply cable and plug permanently attached to the EV (see Figure 1). - Case "B" connection: the connection of an EV to the a.c. supply network (mains) utilizing a detachable cable assembly with a vehicle connector and a.c. supply equipment (see Figure 2). Case B1 corresponds to a connection to wall mountedsocket. Case B2 corresponds to a specific charging station. - Case "C" connection: the connection of an EV to the a.c. supply network (mains) utilizing a supply cable and vehicle connector permanently attached to the supply equipment (see Figure 3). Only case "C" is allowed for mode 4 charging. | | P |
| 6.3.2 | Cord extension set | | Р |
| | A cord extension set or second cable assemblyshall not be used in addition to the cable assembly for the connection of the EV to the EVSE. The vehicle manual shall clearly indicate this. A cable assembly shall be so constructed so that it cannot be used as a cord extension set. | | Р |
| 6.3.3 | Adaptors | | Р |
| | Adaptors shall not be used to connect a vehicle connector to a vehicle inlet. | | Р |



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| Clause | Requirement – Test | Result - Remark | Verdict | |
| 6.4 | Functions provided in each mode of charging for modes 2, 3, and 4 | | Р | |
| 6.4.1 | Modes 2, 3 and 4 functions | | Р | |
| | These functions shall be provided by the EVSE or the EVSE and vehicle system as given below: | | | |
| | verification that the vehicle is properly connected; | | Р | |
| | continuous protective earth conductor continuity checking; | | | |
| | - energization of the system; | | | |
| | - de-energization of the system. | | | |
| 6.4.2 | Optional functions for modes 2, 3 and 4 | | Р | |
| | The following functions should be provided by the EVSE or the EVSE and vehicle system as given below: | | | |
| | 1) selection of charging rate; | | | |
| | determination of ventilation requirements of the charging area; | | P | |
| | detection/adjustment of the real time available load current of the supply equipment; | | | |
| | 4) retaining/releasing of the coupling; | | | |
| | 5) control of bi-directional power flow to and from the vehicle. | | | |
| 6.4.3 | Details of functions for modes 2, 3 and 4 | | Р | |
| 6.4.3.1 | Verification that the vehicle is properly connected | | Р | |
| 6.4.3.2 | Continuous protective earth continuity checking | | Р | |
| 6.4.3.3 | Energization of the system | | Р | |
| 6.4.3.4 | De-energization of the system | | Р | |
| | If the pilot function is interrupted, the power supply to the cable assembly shall be interrupted but the control circuit may remain energized. | | Р | |
| 6.4.4 | Details of optional functions | | Р | |
| 6.4.4.1 | Determination of ventilation requirements during charging | | Р | |



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| Clause | Requirement – Test | Result - Remark | Verdict |
| | If additional ventilation is required during charging, charging shall only be allowed if such ventilation is provided | | Р |
| 6.4.4.2 | Detection/adjustment of the real time available load current of EVSE | | Р |
| | Means shall be provided to ensure that the charging rate shall not exceed the real time available load current of the EVSE and its power supply. | | Р |
| 6.4.4.3 | Retaining/releasing of the coupler | | Р |
| | A mechanical means shall be provided to retain/release the coupler. | | Р |
| 6.4.4.4 | Selection of charging rate | | Р |
| | A manual or automatic means shall be provided to ensure that the charging rate does not exceed the rated capacity of the a.c. supply network (mains), vehicle or battery capabilities. | | Р |
| 6.4.4.5 | Details of optional functions for mode 3 | | N |
| | Bi-directional power flow requires additional control functions that are not treated in this edition. | | N |
| 6.4.5 | Details of pilot function | | Р |
| | For modes 2, 3 and 4, a pilot function is mandatory. | | Р |
| 6.5 | Serial data communication | | Р |
| 7 | Protection against electric shock | | Р |
| 7.1 | General requirements | | Р |
| 7.2 | Protection against direct contact | | Р |
| 7.2.1 | General | | Р |
| 7.2.2 | Accessibility of live parts | | Р |
| 7.2.3 | Stored energy – discharge of capacitors | | Р |
| 7.2.3.1 | Disconnection of EV | | Р |
| 7.2.3.2 | Disconnection of EVSE | | Р |
| 7.3 | Fault protection | | Р |



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| Clause | Requirement – Test | Result - Remark | Verdict |
| | Protection against indirect contact shall consist of one or more recognized provision(s). According to IEC 60364-4-41:2005, recognized individual provisions for fault protection are: - supplementary or reinforced insulation; - protective equipotential bonding; - protective screening; - automatic disconnection of supply; | | Р |
| 7.4 | - simple separation. Supplementary measures | | Р |
| 1.4 | To avoid indirect contact in case of failure of the basic and/or fault protection or carelessness by users, additional protection against electric shock shall be required. | | P |
| 7.5 | Provision for mode 4 EVSE | | N |
| 7.6 | Additional requirements | | N |
| | Under normal conditions, malfunction and single-fault conditions, the charging system shall be designed to limit the introduction of harmonic, d.c. and non-sinusoidal currents that could affect the proper functioning of residual current devices or other equipment. | | N |
| 8 | Connection between the power supply and the EV | | Р |
| 8.1 | General | | Р |
| (| This clause provides a description of the physical conductive electrical interface requirements between the vehicle and the EVSE. | | Р |
| 8.2 | Contact sequencing | | Р |
| | For safety reasons, the contact sequence during the connection process shall be such that the earth connection is made first and the pilot connection is made last. The order of connection of the other contacts is not specified. During disconnection, the pilot connection shall be broken first and the earth connection shall be broken last. | | Р |
| 8.3 | Functional description of a standard interface | | Р |



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| Clause | Requirement – Test | Result - Remark | Verdict | |
| | A standard earthing type plug, socket-outlet and vehicle coupler may be used for modes 1, 2 and 3, provided the pilot function is included for modes 2 and 3. | | P | |
| 8.4 | Functional description of a basic interface | | Р | |
| 8.5 | Functional description of a universal interface | | Р | |
| 9 | Specific requirements for vehicle inlet, connector, p | plug and socket-outlet | Р | |
| 9.1 | General requirements | | Р | |
| | The requirements for accessories of the standard interface are specified in IEC 60309-1, IEC 60309-2 (industrial type) and IEC 60884-1 (domestic type) (as examples A1 and B1 in 6.3). | | Р | |
| 9.2 | Operating temperature | | Р | |
| 9.3 | Service life of inlet/connector and plug/socket- outlet | | Р | |
| 9.4 | Breaking capacity | | Р | |
| | The requirement shall be in accordance with IEC 62196-1. | | Р | |
| 9.5 | IP degrees | 65 | Р | |
| 9.6 | Insertion and extraction force | | Р | |
| 9.7 | Latching of the retaining device | | Р | |
| 10 | Charging cable assembly requirements | | Р | |
| 10.1 | Electrical rating | | Р | |
| | The rated voltage of each conductor shall correspond to the rated voltage of the connecting means. The rated current shall correspond to the rating of the line circuit breaker. | | Р | |
| 10.2 | Electrical characteristics | | Р | |
| | The voltage and current ratings of the cable shall be compatible with those of the charger. | | Р | |
| 10.3 | Dielectric withstand characteristics | | Р | |
| | Dielectric withstand characteristics shall be as indicated for the EVSE in 11.4. | | Р | |
| 10.4 | Mechanical characteristics | | Р | |
| | | | | |



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| Clause | Requirement – Test | Result - Remark | Verdict |
| 10.5 | Functional characteristics | | Р |
| 11 | EVSE requirements | | Р |
| 11.1 | General test requirements - All tests in this standard are type tests. - Unless otherwise specified, type tests shall be carried out on a single specimen as delivered and configured in accordance with the manufacturer's instructions. - The tests in 11.12 may be conducted on separate samples at the discretion of the manufacturer. Unless otherwise specified, all other tests shall be carried out in the order of the clauses and subclauses in this part. - The tests shall be carried out with the specimen, or any movable part of it, placed in the most unfavorable position which may occur in normaluse. - Unless otherwise specified, the tests shall be carried out in a draught-free location and at an ambient temperature of 20 °C ± 5 °C. - The characteristics of the test voltages in 11.4 shall comply with IEC 61180-1. | | P |
| 11.2 | Classification | | Р |
| | EVSE shall be classified according to exposure to environmental conditions: - outdoor use; - indoor use. | outdoor use | Р |
| 11.3 | IP degrees for basic and universal interfaces | | Р |
| 11.3.1 | IP degrees for ingress of objects | | Р |
| 11.3.2 | Protection against electric shock | | Р |
| 11.4 | Dielectric withstand characteristics | | Р |
| 11.4.1 | Dielectric withstand voltage | | Р |
| 11.4.2 | Impulse dielectric withstand (1,2/50 ms) | | Р |
| 11.5 | Insulation resistance | | Р |
| 11.6 | Clearances and creepage distances | | Р |



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| Clause | Requirement – Test | Result - Remark | Verdict |
| 11.7 | Leakage – touch current | | Р |
| 11.8 | Environmental tests | | Р |
| 11.8.1 | General | | Р |
| 11.8.2 | Ambient air temperature | 25℃ | Р |
| 11.8.3 | Ambient humidity | 90% | Р |
| 11.8.4 | Ambient air pressure | | Р |
| 11.9 | Permissible surface temperature | | Р |
| 11.10 | Environmental conditions | | Р |
| 11.11 | Mechanical environmental tests | | Р |
| 11.11.1 | General | | Р |
| 11.11.2 | Mechanical impact | | Р |
| 11.12 | Electromagnetic compatibility tests | | Р |
| 11.13 | Latching of the retaining device | | Р |
| 11.14 | Service | | Р |
| 11.15 | Marking and instructions | | Р |
| 11.15.1 | Connection instructions | | Р |
| 11.15.2 | Legibility | | Р |
| | Compliance is checked by inspection and by rubbing the marking by hand for 15 s with a piece of cloth soaked with water and again for 15 s with a piece of cloth soaked with petroleum spirit | | Р |
| 11.15.3 | Marking of electric vehicle charging station | | Р |
| 11.16 | Telecommunication network | | N |
| | Tests on any telecommunication network or telecommunication port on the EVSE, if present, shall comply with IEC 60950-1. | | N |
| 5 | Standard conditions for operation in service and for | r installation | Р |
| | The rated value of the a.c. supply voltage is up to 690 V. The equipment shall operate correctly within ±10 % of the standard nominal voltage (see IEC 60038). The rated value of the frequency is 50 Hz ± 1% or 60 Hz ± 1 %. | | Р |



| EN 61851-1 | | | |
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| Clause | Requirement – Test | Result - Remark | Verdict |
| | The ambient temperature range during charging may be between –30 °C and +50 °C and at a relative humidity of between 5 % and 95 %. | | Р |
| 6 | Rating of the a.c. input and output | | Р |
| | The input voltage and current rating is according to IEC 60038. | | Р |
| | The output voltage and current rating shall not exceed the values given in table 1. Lower current values may be used. | | N |
| 7 | General test requirements | | Р |
| 7.1 | All tests in this standard are type tests. | | Р |
| 7.2 | Unless otherwise specified, type tests shall be carried out on a single specimen as delivered and configured in accordance with the manufacturer's instructions. | | Р |
| 7.3 | The tests in 11.3 may be conducted on separate samples at the discretion of the manufacturer. Unless otherwise specified, all other tests shall be carried out in the order of the clauses and subclauses in this part. | | Р |
| 7.4 | The tests shall be carried out with the specimen, or any movable part of it, placed in the most unfavourable position which may occur in normal use. | | Р |
| 7.5 | Unless otherwise specified, the tests shall be carried out in a draught-free location and at an ambient temperature of 20 °C ± 5 °C. | | Р |
| 7.6 | The characteristics of the test voltages in 10.1 shall comply with IEC 61180-1. | | Р |
| 8 | Functional and constructional requirements | | Р |
| 8.1 | Control functions | | N |
| | For mode 3 charging, the a.c. electric vehicle charging station provides part of the control functions listed in 6.4 of part 1 of this standard. | | N |
| 8.2 | Emergency service | | Р |



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| Clause | Requirement – Test | Result - Remark | Verdict |
| | If required by national rules, an emergency disconnection device shall be installed to isolate the a.c. supply network (mains) from the a.c. electric vehicle charging station in case of risk of electric shock, fire or explosion. The disconnection device shall be provided with a means to prevent accidental operation. | | Р |
| 8.3 | Permissible surface temperature | | Р |
| | The maximum permissible surface temperature of parts of the a.c. electric vehicle charging station which are hand grasped, at the maximum rated current and at an ambient temperature of 40 °C, shall be - 50 °C for metal parts; - 60 °C for non-metallic parts. | | P |
| | For parts which may be touched but not grasped, maximum permissible surface temperature under the same conditions shall be - 60 °C for metal parts; | | Р |
| 2.4 | - 85 °C for non-metallic parts. | | |
| 8.4 | Charging station protection degree (IP) | | Р |
| | The a.c. electric vehicle charging station, when energized or not, and with the socket-outlet access trap door, if any, closed, shall provide a minimum degree of protection of IP44. | | Р |
| 8.5 | Storage means for the cable assemble | | Р |
| | For case C connections, a storage means shall be provided for the cable assembly and vehicle connector when not in use. The a.c. electric vehicle charging station should be provided with a means to indicate whether or not the cable assembly/vehicle connector has been stored as intended after disconnection from the vehicle. | | N |
| 8.6 | Location of the socket-outlet and storage means for the connector | | N |



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| Clause | Requirement – Test | Result - Remark | Verdict |
| | The lowest part of the socket-outlet (case A and B connections), or the storage means provided for the vehicle connector (case C connection), shall be located at a height between 0,4 m and 1,5 m above ground level. | | N |
| 8.7 | Extension cord | | Р |
| | The use of an extension cord for the connection of the electric vehicle to the a.c. electric vehicle charging station should be prohibited in order to avoid any direct contact or the dangerous use of unsafe components (risk of overload, absence of protective conductor, etc.). | | Р |
| 8.8 | Metering | | Р |
| | Metering equipment provided to measure the use of electricity shall comply with IEC 61036. | | Р |
| 9 | Electrical safety | | Р |
| | The general requirements for electrical safety are specified in part 1 of this standard. In addition, the following requirements apply. | | Р |
| 9.1 | Protection against indirect contact | | Р |
| | The additional protection against electric shock required by 7.4.1 of part 1 of this standard shall not be automatically reset. Manual reset shall be easily accessible to the user. Automatic reset of optional additional protection devices, as specified in 7.4.2 of part 1, shall comply with national regulations. | | Р |
| 9.2 | Earthing electrode and continuity | | Р |
| | The tests for a class I charging station earth electrode, where applicable, and earthing of the a.c. electric vehicle charging station shall be carried out in accordance with the national rules and safety requirements for earthing. | | Р |
| 9.3 | Detection of the electrical continuity of the protective conductor | | Р |
| | For mode 3 charging, the a.c. electric vehicle charging station shall monitor the electrical continuity of the protective conductor to the electric vehicle. If the a.c. electric vehicle charging station detects a loss of electrical continuity of the protective conductor, the electrical supply circuit to the vehicle shall be | | N |



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| Clause | Requirement – Test | Result - Remark | Verdict |
| | opened. | | |
| 10 | Dielectric test requirements | | Р |
| 10.1 | Dielectric withstand characteristics | | Р |
| 10.1.1 | Dielectric withstand voltage | | Р |
| | The dielectric withstand voltage at power frequency (50 Hz or 60 Hz) shall be applied for 1 min as follows: | | - |
| | a) For a class I a.c supply equipment | | P |
| | - 2 000 V r.m.s. in common and differential mode | | • |
| | b) For a class II a.c supply equipment | | |
| | · 4 000 V r.m.s. in common mode (all circuits in relation to the exposed conductive part) | | N |
| | 2 000 V r.m.s. in differential mode (between each electrically independent circuit and all other exposed conductive part-oriented circuits) | | |
| | c) For both class I and class II a.c supply equipment | | N |
| | 4 000 V r.m.s. between power circuits and extra low voltage circuits | | |
| 10.1.2 | Impulse dielectric withstand (1,2/50 μs) | | Р |
| | The dielectric withstand of the power circuits at impulse shall be checked as follows: | | |
| | · 6 000 V: in common mode (according to IEC 60664-1 installation category); | | Р |
| | · 4 000 V: in differential mode (according to IEC 60664-1 installation category). | | |
| 10.1.3 | Insulation resistance | | Р |
| | The insulation resistance with a 500 V d.c. voltage applied between all inputs/outputs connected together (power source included) and the accessible parts shall be | | Р |
| | -for a class I station: R > 1 MW; | | |
| | –for a class II station: R > 7 MW. | | |
| 10.2 | Touch current | | Р |



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| Clause | Requirement – Test | Result - Remark | Verdict |
| | The touch current shall be measured after the damp heat test (see 11.1.4), with the a.c. electric vehicle charging station connected to a.c. supply network (mains) in accordance with 5.1 of IEC 60950. The supply voltage shall be 1,1 times the nominal rated voltage. | | Р |
| 10.3 | Protection measures | | Р |
| | The protective measures against overcurrents and overvoltages shall comply with the requirements of IEC 60364-4-43 and 60364-4-443. | | Р |
| 10.4 | Creepage and clearance distances | | Р |
| | Electrical devices installed in the charging stations shall have clearances and creepage distances complying with those specified in their relevant standards. For bare live conductors and terminations (for example, busbars, connections between apparatus, etc.) clearances and creepage distances shall be chosen according to IEC 60664-1. | | Р |
| 11 | Environmental tests | | Р |
| 11.1 | Climatic environmental tests | | Р |
| 11.1.1 | General | | Р |
| | During the following tests, the a.c. electric vehicle charging station shall function at its nominal voltage with maximum output power and current. After each test, the original requirements shall still be met. | | Р |
| 11.1.2 | Ambient air temperature | | Р |
| | The a.c. electric vehicle charging station shall be designed to operate within the temperature range –30 °C to +50 °C. | | Р |
| 11.1.3 | Dry heat | Under consideration. | N |
| | The test shall be in accordance with IEC 60068-2-2 Bc or Bd test (dry heat) for a test specimen dissipating energy with slow or rapid change of temperature. | | N |
| 11.1.4 | Ambient humidity | | Р |



| EN 61851-1 | | | |
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| Clause | Requirement – Test | Result - Remark | Verdict |
| | The a.c. electric vehicle charging station shall be designed to operate with a relative humidity rate between 5 % and 95 %. One of the two types of tests below shall be conducted. | | Р |
| | 1) Damp heat continuous test The test shall be carried out in accordance with IEC 60068-2-3, test Ca, at 40 °C ± 2 °C and 93 % relative humidity for four days. | | Р |
| | 2) Damp heat cycle test The test shall be carried out in accordance with IEC 60068-2-30, test Db, at 40 °C for six cycles. | | Р |
| 11.1.5 | Cold test | | Р |
| | The test shall be carried out in accordance with IEC 60068-2-1, test Ab, at -30 °C ± 3 °C for 16 h. | | Р |
| 11.1.6 | Ambient air pressure | | Р |
| | The a.c. electric vehicle charging station shall be designed to operate at an atmospheric pressure between 860 hPa and 1 060 hPa. | | Р |
| 11.1.7 | Solar radiation (optional) | | N |
| | The test shall be carried out in accordance with IEC 60068-2-5, test Sa, procedure B. | | N |
| 11.1.8 | Saline mist (optional) | | N |
| | The tests shall be carried out in accordance with IEC 60068-2-52, Kb test – severity one. | | N |
| 11.2 | Mechanical environmental tests | | Р |
| 11.2.1 | General | | Р |
| | After the following tests, no degradation of performance is permitted. | | Р |



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| Clause | Requirement – Test | Result - Remark | Verdict |
| | Compliance is checked by verification after the test that | | |
| | - the IP degree is not affected; | | |
| | the operation of the doors and locking points is not impaired; | | D |
| | the electrical clearances have remained satisfactory for the duration of the tests, and | | |
| | for a charging station having a metallic enclosure, no contact between live parts and the enclosure has occurred, caused by permanent or temporary distortion. | | |
| 11.2.2 | Mechanical impact | | Р |
| | The a.c. electric vehicle charging station body shall not be damaged by mechanical impact. | | Р |
| 11.2.3 | Stability | | Р |
| | The a.c. electric vehicle charging station shall be installed as intended by the manufacturer's installation instructions. A force of 500 N shall be applied for 5 min in the horizontal direction to the top of the a.c. electric vehicle charging station in each of the four directions or in the worst possible horizontal direction. There shall be neither deterioration of the a.c. electric vehicle charging station nor deformation at its summit greater than 50 mm during the load application; | | P |
| 11.3 | Electromagnetic environmental tests | | N |
| 11.3.1 | Immunity to EM disturbances | | N |
| 11.3.1.1 | General | | N |
| 11.3.2 | Immunity to electrostatic discharges | | N |
| 11.3.2.1 | Immunity to low-frequency conducted disturbances | | N |
| 11.3.2.2 | Immunity to high-frequency conducted disturbances | | N |
| 11.3.2.3 | immunity to radiated electromagnetic disturbances | | N |
| 11.3.3 | Emitted EM disturbances | | N |



| EN 61851-1 | | | |
|------------|---|------------------------------|---------|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 11.3.3.1 | Low-frequency conducted disturbances | | N |
| 11.3.3.2 | High frequency conducted disturbances | | N |
| 11.3.3.3 | Radiated electromagnetic disturbances | | N |
| 12 | Specific socket-outlet/connector requirements | See part 1 of this standard. | N |
| 13 | Classification | | Р |
| | EV supply equipments are either class I or class II. | class I | Р |
| 14 | Marking and instructions | | Р |
| 14.1 | Connection instructions | | Р |
| | Instructions for the connection of the electric vehicle to the a.c. electric vehicle charging station shall be provided with the vehicle, with the user's manual and on the a.c. electric vehicle charging station. | | Р |
| 14.2 | Legibility | | Р |
| | The markings required by this standard shall be legible with corrected vision, durable and visible during use. | | Р |
| | Compliance is checked by inspection and by rubbing the marking by hand for 15 s with a piece of cloth soaked with water and again for 15 s with a piece of cloth soaked with petroleum spirit. | | Р |
| | After all the tests of this standard, the marking shall be easily legible; it shall not be easily possible to remove marking plates and they shall show no curling. | | Р |
| 14.3 | Marking of a.c. electric vehicle charging station | | Р |



| EN 61851-1 | | | | |
|------------|---|-----------------|---------|--|
| Clause | Requirement – Test | Result - Remark | Verdict | |
| | The station shall bear the following markings in a clear manner: | | | |
| | a) name or initials of manufacturer; | | | |
| | b) equipment reference; | | | |
| | c) serial number; | | | |
| | d) date of manufacture; | | | |
| | e) rated voltage in V; | | | |
| | f) rated frequency in Hz; | | | |
| | g) rated current in A; | | Р | |
| | h) number of phases; | | | |
| | i) IP degrees; | | | |
| | j) "Indoor Use Only", or the equivalent, if intended for indoor use only; | | | |
| | k) for a Class II station, the symbol shall clearly appear in the markings; | | | |
| | I) some minimal additional information can possibly appear on the station itself (phone number, address of contractor). | | | |
| | | | | |



ANNEX A:

Photo-documentation





Photo 1 General Appearance of the EUT









Photo 3 General Appearance of the EUT

Photo 4 General Appearance of the EUT



*** The End of Report ***