Product Service

Technical Report No.: 64.105.23.30456.01

Date: 2023-04-10

Client:	Autel Digital Power Co., Ltd. Floors 1, 2, 3 and 6, Caihong Keji Building, 36 Hi-tech North Six Road, Songpingshan Community, Xili Sub-district, Nanshan District, Shenzhen City, Guangdong, China
Factory:	Autel Digital Power Co., Ltd. Guangming Branch Room 602, 6th Floor, Electron Factory Building 4, Yanxiang Science & Technology Industrial Park, Gaoxin Road, Dongzhou Community, Guangming Street, Guangming District, Shenzhen, Guangdong, China
Test object:	Product: AC Electric Vehicle Charging Station (Accessories) Model: Maxicharger AC Wallbox Pedestal
Test specification:	EN IEC 61851-1:2019
Purpose of examination:	• Testing for compliance with specified requirements to assess conformity with the essential safety and health requirements of the following European Directives: ☒ LVD directive 2014/35/EU • Testing and evaluation according to the test specification
Test result:	The test results show that the presented product is in compliance with the above listed test specifications.

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1. Description of the test object

1.1 Picture(s)

See Appendix 1.

1.2 Function

Manufacturer's specification for intended use:

The AC Electric Vehicle Charging Station accessories is Class I appliance with protection degree IP54 for indoor/outdoor used.

The live part separated from earthing by basic insulation. Main earthing terminal for fixed wiring was provided. The door is earthed to enclosure by wiring.

Manufacturer's specification for predictive use:

According to the user manual and installation manual.

1.3 Consideration of the foreseeable use

☐ Not applicable
☒ Covered through the applied standard
☐ Covered by the following comment*
☐ Covered by attached risk analysis

*

1.4 Technical Data

Model:	Maxicharger AC Wallbox Pedestal
Rated input Voltage (V):	3P+N+PE, 230/400Vac±10%, 50Hz.
Rated input current (A):	32A.
Protection class:	Class I
Degree of protection:	IP54
Mounting method:	Ground mounted.
Working temperature (°C):	-30°C ~ 40°C

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2. Order

2.1 Date of Purchase Order, Customer's Reference

2023-03-07

2.2 Test Sample(s)

- Reception date(s): 2023-03-07
- Location(s) of reception: TÜV SÜD Testing Center, D1 building, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 511447, China
- Condition of test sample(s): Normal

2.3 Date(s) of Testing

2023-03-10 to 2023-04-03

2.4 Location(s) of Testing

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
TÜV SÜD Testing Center, D1 building, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 511447, China
Shenzhen Chengxin Technology Service Co., Ltd.
No. 13 North of Aiqun Road, Shiyan Street, Baoan District, Shenzhen, Guangdong, China

2.5 Points of Non-Compliance or Exceptions of the Test Procedure

- None

3. Test Results

- "Decision rule according to IEC Guide 115:2021, clause 4.4.3, 4.5.1 was applied."

3.1 Positive Test Results

Test specification(s)	Report no. / Rev. No.	Date	Remark
Electrical safety:	64.105.23.30456.01	2023-04-10	
EMF / EMC / Radiation:	N/A	--	

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3.2 Points of Non-Compliance according to the test specification

- None

4. Remarks

4.1 General

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.

1. The AC Electric Vehicle Charging Station Accessories is Class I appliance with protection degree IP54 for indoor/outdoor use.
2. The live part separated from earthing by basic insulation.
3. Main earthing terminal for fixed wiring was provided. The door is earthed to enclosure by wiring.
4. The AC Electric Vehicle Charging Station Accessories is only used for case B charging station.
5. Certified MCB, RCCB and AC SPD are installed inside, upstream of the charging station.

4.2 Factory surveillance cycle

Your production facility is currently on a
☐ Annual (12 month)
☐ Bi-Annual (6 month)
☐ Quarterly (3 month)
☒ N/A
surveillance cycle.

4.3 Additional information for routine tests to be performed by the factory(ies)

N/A

5. Documentation

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File	File name	Date
Data form (CDF):	Appendix 2	2023-04-10
Photo documentation:	Appendix 1	2023-04-10
User manual:	N/A	
Installation manual:	64105233045601Install_E	2023-04-10

6. Summary

The tests subclauses and test data of this report refer to Appendix 3, they were considered as compulsory testing items fulfilled to evaluate the product, and found to comply with the applicable requirements of standards.

The test specifications are met.

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Tested by: Nino Chen
Project Handler
printed name, function & signature

Approved by: Percy Xiao
Designated Reviewer
printed name, function & signature

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Appendix 1

Details of:	General view of Maxicharger AC Wallbox Pedestal
View: ☒ General ☒ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	General view of Maxicharger AC Wallbox Pedestal
View: ☒ General ☐ Front ☒ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Details of:	General view of Maxicharger AC Wallbox Pedestal
View: ☒ General ☐ Front ☐ Rear ☐ Right ☒ Left ☐ Top ☐ Bottom	

Details of:	Internal view of Maxicharger AC Wallbox Pedestal
View: ☐ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Details of:	Internal view of Maxicharger AC Wallbox Pedestal
View: ☐ General ☒ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	Internal view of Maxicharger AC Wallbox Pedestal
View: ☐ General ☐ Front ☒ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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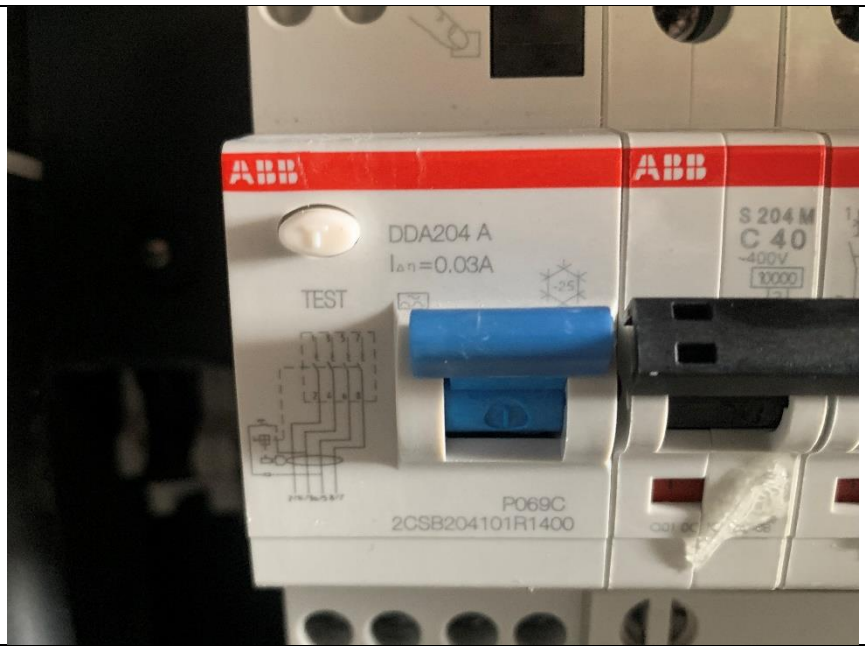
Details of:	General view of MCB
View: ☒ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	General view of Residual Current Circuit Breaker
View: ☒ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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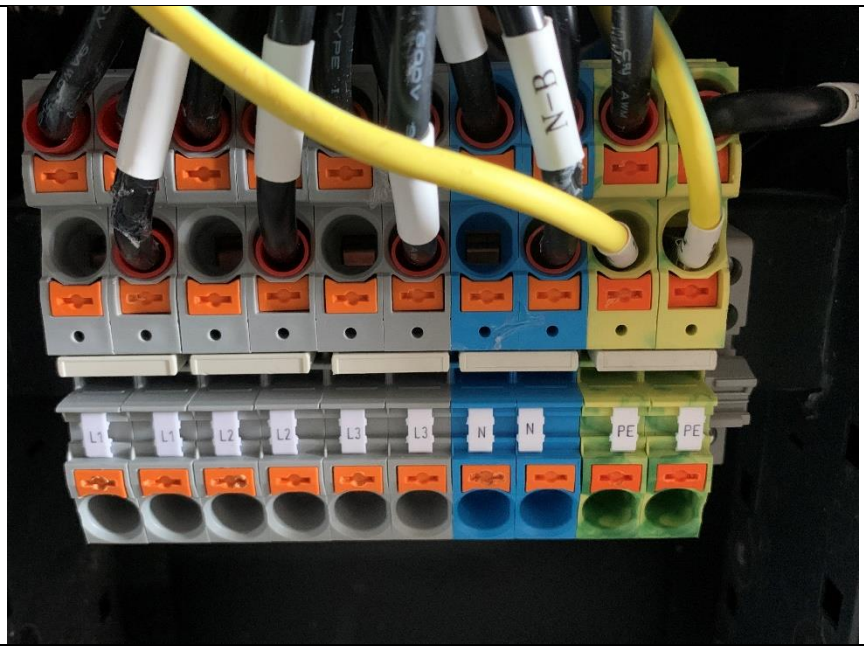
Details of:	General view of AC SPD
View: ☒ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

Details of:	General view of Input terminal block
View: ☒ General ☐ Front ☐ Rear ☐ Right ☐ Left ☐ Top ☐ Bottom	

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Appendix 2

Critical components and material information:

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard *No. and Edition year*	Mark(s) of conformity
Enclosure:					
1. Metal enclosure	Interchangeable	Interchangeable	SUS430 Stainless steel 1.5 mm thickness	Tested with appliance	Tested with appliance
Components related to electrical safety:					
2. Cable gland	AVC Industrial Corp.	MGB32-25B	IP68, 105°C	EN 62444:2013	VDE 40040481
3. Input terminal block	WAGO GmbH & Co. KG	2216-1307, 2216-1304, 2216-1301	600V, 85A, 85°C	EN 60947-7-1:2009 EN 60947-7-2:2009	DOC EUKE_Serie 2216 Revision: 001
4. MCB	ABB STOTZ-KONTAKT GmbH	S204M-C40	440VAC, 40A, 4P, 85°C	EN 60898-1:2019 EN 60947-1:2007 EN 60947-1:2007/A1:2011 EN 60947-1:2007/A2:2014 EN 60947-2:2017 EN 60947-2:2017/A1:2020	DOC 2CDK403001D0607 Rev: 9
5. Residual Current Circuit Breaker	ABB S.p.A. – ELSB	DDA204AC-40_0.03	4P, 40A, 30mA, 85°C	EN 61009-1:2012 + A1:2014 + A2:2014 + A11:2015 + A12:2016 EN 61009-2-1:1994 + A11:1998 EN IEC 63000:2018	DOC 9AKK106713A5614 Rev. D
6. AC SPD	ABB STOTZ-KONTAKT GmbH	OVR T2 3N 40-350 P TS	400VAC, 20KA, 70°C	EN 61643-11:2012/A11:2018	DOC 9AKK108466A4410 Rev:00

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Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard *No. and Edition year*	Mark(s) of conformity
7. Internal cable	GUANGDONG HAERKN NEW ENERGY CO LTD	1015	600Vac, 9AWG, 105°C	UL 758	UL E300956
	DONGGUAN ZHENGWEI ELECTRIC WIRE & CABLE INDUSTRY CO LTD (Alternate)	1015	600Vac, 9AWG, 105°C	UL 758	UL E326510

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Appendix 3

EN IEC 61851-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	**GENERAL REQUIREMENTS**		P
	The EV supply equipment shall be so constructed that an EV can be connected to the EV supply equipment so that in normal conditions of use, the energy transfer operates safely, and its performance is reliable and minimises the risk of danger to the user or surroundings.	The product is AC Electric Vehicle Charging Station accessories.	N/A
	Unless otherwise stated all tests indicated in this document are type tests.		P
	Unless otherwise stated, all tests required by this standard may be conducted on separate samples.		P
	Unless otherwise stated, each test is conducted once.		P
	Unless otherwise specified, all tests shall be carried out in a draught-free location and at an ambient temperature of 20°± 5 °C.		P
	The EV supply equipment shall be rated for one or more of standard nominal voltages and frequencies as given in IEC 60038.		P
	Assemblies for EV supply equipment shall comply with IEC TS 61439-7 with the exceptions or additions as indicated in Clause 13.		P
	The standard applies to equipment that is designed to be used at an altitude up to 2 000 m.		P
	For equipment designed to be used at altitudes above 2 000 m, it is necessary to take into account the reduction of the dielectric strength and the cooling effect of the air.		N/A
5	**CLASSIFICATION**		P
5.1.1	**Characteristics of power supply input**		P

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	The EV supply equipment shall be classified according to the supply network system that it is intended to be connected to:		P
	– EV supply equipment connected to AC supply network;		P
	– EV supply equipment connected to DC supply network.		N/A
	The EV supply equipment shall be classified according to the electric connection method:		P
	– Plug and cable connected;		N/A
	– Permanently connected.		P
5.1.2	**Characteristics of power supply output**		P
	The EV supply equipment shall be classified according to the type of current the EV supply equipment delivers:		P
	– AC EV supply equipment;		P
	– DC EV supply equipment;		N/A
	– AC and/or DC EV supply equipment.		N/A
5.2	**Normal environmental conditions**		P
	The EV supply equipment shall be classified according to the environmental conditions and use:		P
	– indoor use;		P
	– outdoor use.		P
5.3	**Special environmental conditions**		**P**
	The EV supply equipment may be classified according to their suitability for use in special environmental conditions other than those specified in this document, if declared so by the manufacturer.	Ambient temperature is specified -30 ~ +40°C by the manufacturer.	P
5.4	**Access**		**P**
	The EV supply equipment shall be classified according to the location they are intended for:		P
	– equipment for locations with restricted access;		N/A
	– equipment for locations with non-restricted access.		P

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5.5	**Mounting method**		**P**
	The EV supply equipment shall be classified according to the type of mounting:		P
	a) stationary equipment;		P
	– mounted on walls, poles or equivalent positions:		P
	•flush mounted;		N/A
	•surface mounted.		P
	– pole/column/pipe-mounted		N/A
	– floor mounted		N/A
	– ground mounted.		P
	b) non-stationary equipment		N/A
	– portable equipment;		N/A
	– mobile equipment.		N/A
5.6	**Protection against electric shock**		**P**
	The equipment shall be classified according to the protection against electric shock:		P
	– class I equipment;		P
	– class II equipment;		N/A
	– class III equipment.		N/A
5.7	**Charging modes**		**N/A**
	The EV supply equipment shall be classified according to 6.2:		N/A
	Mode 1, Mode 2, Mode 3 or Mode 4		N/A
6	**CHARGING MODES AND FUNCTIONS**		**P**
6.3.1.6	**Maximum allowable current**		P
	A means shall be provided to inform the EV of the value of the maximum current it is allowed to draw. The value of the maximum current permitted shall be transmitted and shall not exceed any of the following:		P
	•the rated output current of the EV supply equipment,		P
	•the rated current of the cable assembly.		P

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	The transmitted value may change, without exceeding the maximum allowed current, to adapt to power limitations, e.g. for load management.		P
	The EV supply equipment may interrupt the energy supply if the current drawn by the EV exceeds the transmitted value.		P
8	**PROTECTION AGAINST ELECTRIC SHOCK**		**P**
8.1	**Degrees of protection against access to hazardous-live-parts**		**P**
	The different parts of the EV supply equipment as mentioned shall fulfil the following requirements:		P
	•IP ratings for enclosures shall be at least IPXXC;		P
	•vehicle connector when mated with vehicle inlet: IPXXD;		N/A
	•plug mated with socket-outlet: IPXXD;		N/A
	•vehicle connector intended for Mode 1 use, not mated: IPXXD;		N/A
	•vehicle connector intended for Mode 2 use, not mated: IPXXB and fulfilling the following:		N/A
	Minimum opening of the contact equal to the clearance according to IEC 60664-1 considering overvoltage category 2 (e.g. the value given in IEC 60664-1 for 230 V/400 V is 2,5 kV rated impulse voltage withstand that implies 1,5 mm separation of contacts) and inhibits the charging and warns the user in case of welded contact.		N/A
	•vehicle connector and EV socket-outlet intended for Mode 3 use, not mated: IPXXB provided it is associated directly upstream with a mechanical switching device (see also 12.3) and fulfilling one of the following:		P
	a) minimum opening of the contact equal to the clearance according to IEC 60664-1 considering overvoltage category 3 (e.g. the value given in IEC 60664-1 for 230 V/400 V is 4 kV rated impulse voltage withstand that implies at least 3 mm separation of contacts);		P

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	b) presence of monitoring of the switching contacts associated with a means to operate another mechanical switching device providing isolating function upstream the above in case of fault of operation of the switching device upstream the accessory;		N/A
	c) presence of shutters on live entry hole of the socket-outlets or connectors for case C.		N/A
8.3	**Fault protection**		**P**
	Fault protection shall consist of one or more protective measures as permitted according to IEC 60364-4-41:		P
	•automatic disconnection of supply;		P
	•double or reinforced insulation;		P
	•electrical separation if limited to the supply of one item of current-using equipment;		P
	•extra low-voltage (SELV and PELV).		P
	Electric separation is fulfilled if there is one electrically separated circuit for each EV.		N/A
8.5	**Residual current protective devices**		**P**
	EV supply equipment can have one or more connecting points to supply energy to EVs.		P
	Where connecting points can be used simultaneously and are connected to a common input terminal of the EV supply equipment, they shall have individual protection incorporated in the EV supply equipment.		N/A
	If the EV supply equipment has more than one connecting point that cannot be used simultaneously then such connecting points can have common protection devices.		N/A
	EV supply equipment that includes an RCD and that does not use the protective measure of electrical separation shall comply with the following:		P
	•The connecting point of the EV supply equipment shall be protected by an RCD having a rated residual operating current not exceeding 30 mA;		P

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	•RCD(s) protecting connecting points shall be at least type A;	Certified RCBOs have been installed inside, upstream of the charging station.	P
	•RCDs shall comply with one of the following standards: IEC 61008-1, IEC 61009-1, IEC 60947-2 and IEC 62423;	Considered in charging station.	N/A
	•RCDs shall disconnect all live conductors.		P
	Where the EV supply equipment is equipped with a socket-outlet or vehicle connector for AC use in accordance with IEC 62196 (all parts), protective measures against DC fault current shall be taken. The appropriate measures shall be:		P
	•RCD type B or		N/A
	•RCD Type A and appropriate equipment that ensures the disconnection of the supply in case of DC fault current above 6 mA.	Considered in charging station.	N/A
12	**EV SUPPLY EQUIPMENT CONSTRUCTIONAL REQUIREMENTS AND TESTS**		**P**
12.1	**General**		**P**
	The control means and the protection means in Mode 2 EV supply equipment that is intended to be used both as stationary equipment and as portable equipment shall comply with IEC 61851-1 and with IEC 62752.		N/A
	For case C EV supply equipment, the output cable assembly is considered part of the assembly for testing purpose.		N/A
	Electric devices and components of EV supply equipment shall comply with their relevant standards. The tests of devices and components shall be carried out with the specimen, or any movable part of it, placed in the most unfavourable position that can occur in normal use.		P
	For extreme environment or other special service conditions, see IEC TS 61439-7.		P
12.2	**Characteristics of mechanical switching devices**		**P**
12.2.1	**General**		P

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	Switching devices within EV supply equipment intended to supply the connecting points shall comply with their relevant standards, with at least the characteristics as given in 12.2.		P
12.2.2	**Switch and switch-disconnector**		N/A
	Switches and switch-disconnectors shall comply with IEC 60947-3.		N/A
	For AC applications, switches and switch-disconnectors shall have a rated current, at a utilization category of at least AC-22A, not less than the rated current of the circuit that they are intended to operate in.		N/A
	For DC applications, switches and switch-disconnectors shall have a rated current, at a utilization category of at least DC-21A, not less than the rated current of the circuit that they are intended to operate in.		N/A
12.2.4	**Circuit-breaker**		P
	Circuit breakers, if any, shall comply with IEC 60898-1 or IEC 60947-2 or IEC 61009-1.	Certified RCBOs have been be installed inside, upstream of the charging station.	P
12.2.6	**Inrush current**	Tested with certified MCB, model S204M-C40.	P
	AC EV supply equipment shall withstand the inrush current according to 8.2.2 of ISO 17409:2015.		P
	The following values are specified in ISO 17409:		P
	•After closing the contactor in the EV supply equipment at the peak value of the supply voltage, the EV supply equipment shall be able to withstand 230 A peak within the duration of 100 µs.		P
	•During the next second the EV supply equipment shall be able to withstand 30 A (rms).		P
	The protection means shall be selected not to trip for inrush current.		P

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12.3	**Clearances and creepage distances**		**P**
	The clearances and creepage distances in the EV supply equipment, installed as intended by the manufacturer, shall be in accordance with the requirements specified in IEC 60664-1.		P
	Parts of the EV supply equipment directly connected to the public AC supply network shall be designed according to overvoltage category IV.		N/A
	Permanently connected EV supply equipment shall be designed according to a minimum overvoltage category III except for the socket-outlet or the vehicle connector in case C where a minimum overvoltage category II applies.	BI: >3.9mm	P
	EV supply equipment supplied through a cable and plug shall be designed according to a minimum overvoltage category II.		N/A
	Equipment that is intended to be used under the conditions of a higher overvoltage category shall include appropriate overvoltage protective device (see 4.3.3.6 of IEC 60664-1:2007).		N/A
12.4	**IP degrees**		**P**
12.4.1	**Degrees of protection against solid foreign objects and water for the enclosures**		P
	Enclosures of the EV supply equipment shall have an IP degree, according to IEC 60529 as follows:		P
	•indoor use: at least IP41;		N/A
	•outdoor use: at least IP44.	IP54	P
	The minimum IP degree for socket-outlets and the vehicle connectors shall be in accordance with their appropriate standards.		P
	IPX4 may be obtained by the combination of the socket-outlet or connector and the lid or cap,		P

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	EV supply equipment enclosure or EV enclosure.		
12.2.4	**Degrees of protection against solid foreign objects and water for basic, universal and combined and DC interfaces**		P
	The minimum IP degrees for ingress of objects and liquids shall be:		P
	•Indoor use:		N/A
	– vehicle connector when mated with vehicle inlet: IP21;		N/A
	– EV plug mated with EV socket-outlet: IP21;		N/A
	– vehicle connector for case C when not mated: IP21;		N/A
	– vehicle connector for case B when not mated: IP24.		N/A
	•Outdoor use:		P
	– vehicle connector when mated with vehicle inlet: IP44;		N/A
	– EV plug mated with EV socket-outlet: IP44;		N/A
	– vehicle connector when not mated: IP24;		N/A
	– vehicle connector for case B when not mated: IP24;		N/A
	– socket-outlet when not mated: IP24.		N/A
	IPX4 may be obtained by the combination of the socket-outlet or connector and the lid or cap, EV supply equipment enclosure or EV enclosure.		P
12.5	**Insulation resistance**		**P**
	The insulation resistance measured with a 500 V DC voltage applied between all inputs/outputs connected together (power source included) and the accessible parts shall be:		P
	•for a class I EV supply equipment: R > 1 MΩ;	Between hazardous part and earthing metal enclosure: >1MΩ.	P
	•for a class II EV supply equipment: R > 7 MΩ.		N/A

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	For this test all extra low voltage (ELV) circuits shall be connected to the accessible parts during the test.		P
	The measurement of insulation resistance shall be carried out with the protective impedances disconnected, and after applying the test voltage for the duration of 1 min and immediately after the damp heat continuous test of IEC 60068-2-78, test Ca, at 40 °C ± 2 °C and 93 % relative humidity for four days.	Test 12.9 first, then 12.5 and 12.6 test.	P
	The conditioning test for the insulation test and the touch current can be avoided if the conditioning for test of 12.9 followed by test of 12.5, 12.6 and final test of 12.9, are conducted sequentially in that order.		P
12.6	**Touch current**		**P**
	The touch current between any AC supply network poles and the accessible metal parts connected with each other, and with a metal foil covering insulated external parts, is measured in accordance with IEC 60990 and shall not exceed the values indicated in Table 1.		P
	The touch current shall be measured within one hour after the damp heat continuous test of IEC 60068-2-78, test Ca, at 40 °C± 2 °C and 93 % relative humidity for four days, with the electric vehicle charging station connected to AC supply network in accordance with IEC 60990.	Test 12.9 first, then 12.5 and 12.6 test.	P
	The test voltage shall be 1,1 times the maximum rated voltage.	440Vac	P
	Table 1 – Touch current limits		P
	Between any network poles and the accessible metal parts connected with each other and a metal foil covering insulated external parts:		P
	Class I 3,5 mA	Not exceed 0.01mA.	P
	Class II 0,25 mA		N/A

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	Between any network poles and the metal inaccessible parts normally non-activated (in the case of double insulation):		N/A
	Class I N/A		N/A
	Class II 3,5 mA		N/A
	Between inaccessible and accessible parts connected with each other and a metal foil covering insulated external parts (additional insulation):		N/A
	Class I N/A		N/A
	Class II 0,5 mA		N/A
	This test shall be made when the EV supply equipment is functioning with a resistive load at rated output power.		P
	Circuitry that is connected through a fixed resistance or referenced to earth (for example, proximity function and control pilot function) are disconnected before this test.		P
	The equipment is fed through an isolating transformer or installed in such a manner that it is isolated from the earth.		P
12.7	**Dielectric withstand voltage**		**P**
12.7.1	**AC withstand voltage**		P
	The dielectric withstand voltage, at power frequency of 50 Hz or 60 Hz, shall be applied for 1 min as follows:		P
	1) For a class I EV supply equipment. (Un + 1 200 V) (r.m.s.) in common mode (all circuits in relation to the exposed conductive parts) and differential mode (between each electrically independent circuit and all other exposed conductive parts or circuits) as specified in 5.3.3.2 of IEC 60664-1:2007.		P
	2) For a class II EV supply equipment. 2 times (Un +1 200 V) (r.m.s). in common mode (all circuits in relation to the exposed conductive parts) and differential mode (between each electrically independent circuit		N/A

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	and all other exposed conductive parts or circuits) as specified in 5.3.3.2.3 of IEC 60664-1:2007.		
	3) For both class I and class II AC EV supply equipment where the insulation between the AC supply network and the extra low voltage circuit is double or reinforced insulation, 2 times (Un + 1 200 V) (r.m.s.) shall be applied to the insulation.		N/A
	Alternatively the test can be carried out using a DC voltage equal to the AC peak values.		P
	For this test, all the electrical equipment shall be connected, except those items of apparatus which, according to the relevant specifications, are designed for a lower test voltage; current consuming apparatus (e.g. windings, measuring instruments, voltage surge suppression devices) in which the application of the test voltage would cause the flow of a current, shall be disconnected.		P
	Such apparatus shall be disconnected at one of their terminals unless they are not designed to withstand the full test voltage, in which case all terminals may be disconnected		P
12.7.2	**Impulse dielectric withstand (1,2 µs/50 µs)**		P
	The dielectric withstand of the power circuits at impulse test shall be tested according to IEC 60664-1.		P
	The impulse voltage shall be applied to live parts and exposed conductive parts.		P
	The test shall be carried out in accordance with the requirements of IEC 61180.		P
	Parts of the EV supply equipment directly connected to the public AC supply network shall be tested according to overvoltage category IV.		N/A
	Permanently connected EV supply equipment shall be tested according to an overvoltage category III except for the socket-outlet or the		P

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	vehicle connector in case C where an overvoltage category II applies.		
	EV supply equipment supplied through a cable and plug shall be tested according to an overvoltage category II.		N/A
12.8	**EV supply equipment shall comply with IEC TS 61439-7.**		**P**
12.9	**Damp heat functional test**		**P**
	Following the conditioning defined below, the EV supply equipment is deemed to pass the test, if, it passes the normal sequences test according to A.4.7 of Annex A. The precision of the timing does not need to be verified.	Not applied.	N/A
	Conditioning:		P
	– For indoor units, 6 cycles of 24 h each to a damp heat cycling test according to IEC 60068-2-30 (Test Db) at (40±3) °C and relative humidity of 95 %;		N/A
	– For outdoor units, two ~~12 day~~ periods, with each period consisting of 5 cycles of 24 h each to a damp heat cycling test according to IEC 60068-2-30 (Test Db) at (40±3) °C and relative humidity of 95 %.	According to CTL DSH 2077, tested with two 5 day periods, totally 10 cycle.	P
12.10	**Minimum temperature functional test**		**P**
	The EV supply equipment shall be pre-conditioned in accordance with IEC 60068-2-1, test Ab, at the minimum operating temperature (either -5 °C for indoor, -25 °C outdoor or lower values declared by the manufacturer ± 3 K) for (16 ± 1) h.	-30°C declared by the manufacturer.	P
	The EV supply equipment is deemed to pass the test, if, immediately after the preconditioning, it passes the sequences test according to A.4.7 of Annex A while at the minimum operating temperature. The precision of the timing does not need to be verified.	Not applied.	N/A
12.11	**Mechanical strength**		**P**
	For Mode 2 EV supply equipment the minimum degree of protection of the external	The metal enclosure has been verified to against	P

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	enclosure against mechanical impact shall be IK08 according to IEC 62262.	mechanical impact and pass this requirement.	
	After the test, the samples shall show that:		P
	– the IP degree according to 12.5 is not impaired;		P
	– no part has moved, loosened, detached or deformed to the extent that any safety functions are impaired;		P
	– the test did not cause a condition that results in the equipment not complying with the strain relief requirements, if applicable;		P
	– the test did not result in a reduction of creepage and clearance between uninsulated live parts of opposite polarity, uninsulated live parts and accessible dead or grounded metal below the minimum acceptable values;		P
	– the test did not result in any other evidence of damage that could increase the risk of fire or electric shock.		P
13	**OVERLOAD AND SHORT-CIRCUIT PROTECTION**		**P**
13.1	**General**		**P**
	Where connecting points can be used simultaneously and are intended to be supplied from the same input line, they shall have individual protection incorporated in the EV supply equipment.		P
	If the EV supply equipment presents more than one connecting point then such connecting points may have common overload protection means and may have common short-circuit protection means, if those protection means provide the required protection for each of the connecting points.		N/A
	If the EV supply equipment presents more than one connecting point that cannot be used simultaneously then such connecting points can have common protection means.		N/A
	Such overcurrent protective devices shall comply with IEC 60947-2, IEC 60947-6-2 or		N/A

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	IEC 61009-1 or with the relevant parts of IEC 60898 series or IEC 60269 series.		
13.2	**Overload protection of the cable assembly**		**P**
	The EV charging stations or Mode 2 EV supply equipment shall provide overload protection for all cases for all intended cable conductor sizes if not provided by the upstream supply network.	The accessories provided RCBO for overload protection.	P
	The overload protection may be provided by a circuit breaker, fuse or combination thereof.		P
	If overload protection is provided by a means other than a circuit breaker, fuse or combination thereof, such means shall trip within 1 min if the current exceeds 1,3 times the rated current of the cable assembly.		N/A
13.3	**Short-circuit protection of the charging cable**		**P**
	The EV charging stations or Mode 2 EV supply equipment shall provide short-circuit current protection for the cable assembly if not provided by the supply network.		P
	In case of short-circuit, the value of I2t at the EV socket-outlet of the Mode 3 charging station shall not exceed 75 000 A2s.		P
	In case of short-circuit, the value of I2t at the vehicle connector (Case C) of the Mode 3 charging station shall not exceed 80 000 A2s.		N/A
	The real value of the prospective short-circuit current is evaluated at the point where the cable assembly is connected.		P
16	**MARKING AND INSTRUCTIONS**		**P**
16.1	**Installation manual of EV charging stations**		**P**
	The installation manual of EV charging stations shall indicate the classification as given in Clause 5.		P
	The EV supply equipment manufacturer shall state the interface characteristics specified in Clause 5 of IEC TS 61439-7:2014 in the manual where applicable.		P

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	Wiring instructions shall be provided.		P
	If protective devices are included in the EV charging station, the manual shall indicate the characteristics of those protection devices explicitly describing the type and rating.		P
	If the protective devices are not in the EV charging station, the manual shall indicate all information necessary for the installation of external protection explicitly describing the type and rating of the devices to be used.	.	N/A
	It is recommended that the installation manual be made available to future customers.		P
	If the EV charging station has more than one connection of the equipment to the AC supply network, and does not have individual protection for each connecting point to the vehicles, then the installation manual shall indicate that each connection of the equipment to the AC supply network requires individual protection.		N/A
	The installation manual shall indicate if the optional function for ventilation is supported by the charging station (6.3.2.2).		N/A
	The installation manual shall indicate ratings or other information that denote special (severe or unusual) environmental conditions of use, see 5.3.	Operation temperature:-30 to +40°C; Storage temperature: -40 to +70°C; Relative Operation and Storage Humidity: 95% RH Maximum.	P
16.2	**User manual for EV supply equipment**		**P**
	User information shall be provided by the manufacturer on the EV supply equipment or in a user's manual.		P
	Such information shall state:		P
	•which adaptors or conversion adapters are allowed to be used, or		N/A

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	•which adaptors or conversion adapters are not allowed to be used, or		N/A
	•that adaptors or conversion adapters are not allowed to be used, and		P
	•that cord extension sets are not allowed to be used.		P
	The user manual shall include information about national usage restrictions.		P
16.3	**Marking of EV supply equipment**		N/A
	The EV supply equipment manufacturer shall provide each EV supply equipment with one or more labels, marked in a durable manner and located in a place such that they are visible and legible during installation and maintenance:		N/A
	a) EV supply equipment manufacturer's name, initials, trade mark or distinctive marking;		N/A
	b) type designation or identification number or any other means of identification, making it possible to obtain relevant information from the EV supply equipment manufacturer;		N/A
	c) “Indoor Use Only", or the equivalent, if intended for indoor use only;		N/A
	The EV supply equipment manufacturer shall provide each EV supply equipment with one or more labels, marked in a durable manner and located in a place such that they are visible and legible during installation:		N/A
	d) means of identifying date of manufacture;		N/A
	e) type of current;		N/A
	f) frequency and number of phases in case of alternating current;		N/A
	g) rated voltage (input and output if different);		N/A
	h) rated current (input and output if different) and the ambient temperature used to determine the rated current;		N/A
	i) degree of protection;		N/A
	j) all necessary information relating to the special declared classifications, characteristics and diversity factor(s), severe		N/A

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	or unusual environmental conditions of use, see 5.3.		
16.5	**Durability test for marking**		N/A
	Marking made by moulding, pressing, engraving or similar, including labels with a laminated plastic covering, shall not be submitted to the following test.		N/A
	The markings required by this standard shall be legible with corrected vision, durable and visible during use.		N/A
	After the test, the marking shall be legible to normal or corrected vision without additional magnification. It shall not be easily possible to remove marking plates and they shall show no curling.		N/A

12.3	**TABLE: Clearance And Creepage Distance Measurements**					**P**
clearance cl and creepage distance dcr at/of:	**Up (V)**	**U r.m.s. (V)**	**Required cl (mm)**	**cl (mm)**	**required dcr (mm)**	**dcr (mm)**
BI						
Between live part and earthing on input terminal block	/	230	3.0	>3.9	3.0	>3.9
Supplementary information: Clearance(mm)≤ Creepage distance(mm) Pollution degree 3 and overvoltage category III assumed.						

12.5	**TABLE: Insulation resistance measurements**	**P**
Insulation resistance R between:	**R (MΩ)**	**Required R (MΩ)**
Between live parts of input and earthing / grounded metal enclosure	>1	>1
Between live parts of output and earthing / grounded metal enclosure	>1	>1
Supplementary information:		

12.6	**TABLE: Touch current test**		**P**
	Test circuit	-	—

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	Supply voltage (Volt) ..... :		440			—
	Frequency (Hz) ..... :		50			—
—	—	—	Touch Current (mA r.m.s.)			
Terminal A (Switch “s”) of Measuring Instrument Connected to:	Switch “e” Position	Component Disconnected	Polarity P1/Primary Switch Condition			
—	—	—	Normal/ EUT On	Normal/ EUT Off	Reverse /EUT On	Reverse/EUT Off
Metal enclosure	Open	—	0.01	0.01	0.01	0.01
Supplementary information:						

12.7.1	**TABLE: AC withstand voltage**	**P**
Test voltage applied between:	**Test potential applied (V)**	**Breakdown / flashover (Yes/No)**
Between live parts of input and earthing / grounded metal enclosure	2100V d.c.	No
Between live parts of output and earthing / grounded metal enclosure	2100V d.c.	No
Supplementary information:		

12.7.2	**TABLE: Impulse dielectric withstand test (1.2/50μs)**	**P**
Test voltage applied between:	**Test voltage applied (V)**	**Breakdown / flashover (Yes/No)**
Between live parts of input and earthing / grounded metal enclosure	4000	No
Between live parts of output and earthing / grounded metal enclosure	4000	No
Supplementary information:		

12.8	**TABLE: Permissible surface temperature**		**P**
1	Supply voltage (V) : 195.5Vac	Output: Output voltage and current of AC: 230/400Vac-15%, 32A	
2	Supply voltage (V) : 264.5Vac	Output: Output voltage and current of AC: 230/400Vac+15%, 32A	

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1	**TABLE: Permissible surface temperature**			**P**
	Supply voltage (V) .....:	195.5Vac		—
	Output voltage and current .....:	195.5Vac, 32A		—
	Ambient T (°C) .....:	--		
Maximum measured temperature T of part/at:		T (°C)	Transfer to Tmax. (°C):	Allowed T_{max} (°C)
Ambient temperature		28.2	40.0	--
Accessible metal enclosure (front)		34.2	46.0	65
Accessible metal enclosure (back)		34.8	46.6	65
Accessible metal enclosure (top)		37.9	49.7	65
Accessible metal enclosure (side)		39.1	50.9	65
Main input terminal block		54.6	66.4	85
AC input cord L1		59.5	71.3	105
AC input cord N		51.3	63.1	105
Circuit breaker, 5mm		62.1	73.9	85
Type A RCD Module, 5mm		61.4	73.2	85
AC SPD		39.8	51.6	70
Supplementary information:				

2	**TABLE: Permissible surface temperature**			**P**
	Supply voltage (V) .....:	264.5Vac		—
	Output voltage and current .....:	264.5Vac, 32A		—
	Ambient T (°C) .....:	--		
Maximum measured temperature T of part/at:		T (°C)	Transfer to Tmax. (°C):	Allowed T_{max} (°C)
Ambient temperature		28.8	40.0	--
Accessible metal enclosure (front)		35.6	46.8	65
Accessible metal enclosure (back)		36.0	47.2	65
Accessible metal enclosure (top)		41.4	52.6	65
Accessible metal enclosure (side)		40.6	51.8	65
Main input terminal block		55.9	67.1	85
AC input cord L1		61.0	72.2	105
AC input cord N		52.7	63.9	105
Circuit breaker, 5mm		64.6	75.8	85

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Type A RCD Module, 5mm	63.6	74.8	85
AC SPD	41.3	52.5	70
Supplementary information:			

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