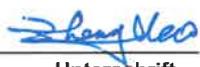
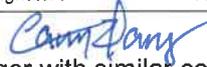


Prüfbericht - Nr.: <i>Test report:</i>	50159464 001	Auftrags-Nr.: <i>Order No.:</i>	154303407	Seite 1 von 1 <i>Page 1 of 1</i>
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	373688	Auftragsdatum: <i>Order date:</i>	02.01.2018	
Auftraggeber: <i>Client:</i>	Zhangjiagang Uchen New Energy Technology Co., Ltd No.999 Yongjin Road, Miaoqiao, Tangqiao Town, Zhangjiagang City, Jiangsu Province, P.R. China			
Prüfgegenstand: <i>Test item:</i>	AC EV Charger			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	SEL-32 SES-32			
Auftrags-Inhalt: <i>Order content:</i>	Type Test			
Prüfgrundlage: <i>Test specification:</i>	EN 61851-1: 2011 EN 61851-22: 2002			
Wareneingangsdatum: <i>Date of receipt:</i>	08.04.2018			
Prüfmuster-Nr.: <i>Test sample No.:</i>	A000687076-001~005			
Prüfzeitraum: <i>Testing period:</i>	08.01.2018 ~ 23.06.2018			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shanghai) Co., Ltd			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shanghai) Co., Ltd			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
25.07.2018	Leeham Zhuang / PE		25.07.2018	Zheng Hao / TC
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>
				
Sonstiges / Other: Trainee: Cavin Zhang 		The above mention models are AC EV charger with similar constructions. The difference between these two models are described in the report. The IP degree of the products are IP55 for storage and IP54 for mating with vehicle. Attachment 1: Equipment list Attachment 2: Acceptance report of electronic RCD according to EN 61008-1.		
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar
Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable
<p>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i></p>				



TEST REPORT IEC 61851-1 Electric vehicle conductive charging system – Part 1: General requirements IEC 61851-22 AC Electric Vehicle Charging Station	
Report Number	50159464 001
Date of issue	10.07.2018
Total number of pages	23
Applicant's name	Zhangjiagang Uchen Technology & Engine Co., Ltd
Address	No.999 Yongjin Road, Miaoqiao, Tangqiao Town, Zhangjiagang City, Jiangsu Province, P.R. China
Test specification:	
Standard	EN 61851-1: 2011 EN 61851-22: 2002
Test procedure.....	Type test
Non-standard test method.....	N/A
Test Report Form No.....	IEC61851_1&22A
Test Report Form(s) Originator.....	UL
Master TRF	2012-10
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Test item description	AC EV Charger
Trade Mark	DUOSIDA
Manufacturer	Zhangjiagang Uchen Technology & Engine Co., Ltd
Model/Type reference	SEL-32, SES-32
Ratings	SEL-32 : Input: 230VAC, 32A, 50Hz/60Hz Output: 230VAC, 32A, 50Hz/60Hz, 7.2kW SES-32 : Input: 230VAC, 32A, 50Hz/60Hz Output: 230VAC, 32A, 50Hz/60Hz, 7.2kW

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Testing procedure and testing location:		
<input checked="" type="checkbox"/>	Testing Laboratory:	TÜV Rheinland (Shanghai) Co., Ltd
Testing location/ address :		No. 177, Lane 777, West Guangzhong Road, Jing'an District, Shanghai 200072, P.R. China om
<input type="checkbox"/>	Associated Testing Laboratory:	
Testing location/ address :		
Tested by (name + signature) :		
Approved by (name + signature) :		
<input type="checkbox"/>	Testing procedure: TMP	
Testing location/ address :		
Tested by (name + signature) :		
Approved by (name + signature) :		
<input type="checkbox"/>	Testing procedure: WMT	
Testing location/ address :		
Tested by (name + signature) :		
Witnessed by (name + signature) :		
Approved by (name + signature) :		
<input type="checkbox"/>	Testing procedure: SMT	
Testing location/ address :		
Tested by (name + signature) :		
Approved by (name + signature) :		
Supervised by (name + signature) .. :		

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<p>List of Attachments (including a total number of pages in each attachment): Attachment 1: Equipment list Attachment 2: Acceptance report of electronic RCD according to EN 61008-1.</p>	
<p>Summary of testing: Pass</p>	
<p>Tests performed (name of test and test clause):</p> <ul style="list-style-type: none"> • All tests item are performed. • The equipment has been evaluated for a ambient temperature range of -20°C~ +50°C. 	<p>Testing location:</p> <p>TÜV Rheinland (Shanghai) Co., Ltd</p>
<p>Summary of compliance with National Differences List of countries addressed:</p> <p><input type="checkbox"/> The product fulfills the requirements of _____ (insert standard number and edition and delete the text in parenthesis or delete the whole sentence if not applicable)</p>	

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Copy of marking plate

The artwork below may be only a draft.

DUOSIDA

MANUFACTURER :	DUOSIDA
MODEL NUMBER :	SES-32
SERIAL NUMBER :	XXXXXXXX
DATE OF MANUFACTURE :	XXXX.XX.XX
RATED SUPPLY VOLTAGE :	230V/AC 50/60HZ
RATED OUTPUT VOLTAGE AND CURRENT :	230V/AC,32A,7.2KW
NUMBER OF PHASES :	SINGLE-PHASE
IP CODE :	IP55(STORAGE) IP54(MATED WITH VEHICLE)

DANGER:High Voltage.Please don't open the cover

WARNING:Only for charging battery electric vehicles and plug-in hybrid electric vehicles

WARNING:Don't unplug or plug in the plug in the case of electricity

DUOSIDA

MANUFACTURER :	DUOSIDA
MODEL NUMBER :	SEL-32
SERIAL NUMBER :	XXXXXXXX
DATE OF MANUFACTURE :	XXXX.XX.XX
RATED SUPPLY VOLTAGE :	230V/AC 50/60HZ
RATED OUTPUT VOLTAGE AND CURRENT :	230V/AC,32A,7.2KW
NUMBER OF PHASES :	SINGLE-PHASE
IP CODE :	IP55(STORAGE) IP54(MATED WITH VEHICLE)

DANGER:High Voltage.Please don't open the cover

WARNING:Only for charging battery electric vehicles and plug-in hybrid electric vehicles

WARNING:Don't unplug or plug in the plug in the case of electricity

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Test item particulars.....:	
Classification of use.....:	Outdoor/Indoor Use
Supply Connection.....:	Permanent connection
Output Connector Interface Type.....:	Standard Sheet 2-Ile
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.....:	08.01.2018
Date (s) of performance of tests.....:	08.01.2018 ~ 23.06.2018
General remarks:	
<p>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.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> <p>This Test Report includes the requirements from IEC 61851-1 and IEC 61851-22. The requirements shown in the attached IEC 61851-22 portion of the Report only include verdicts for the requirements that are not already addressed by IEC 61851-1.</p>	
Manufacturer's Declaration per sub-clause 6.2.5 of IEC 60060-02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : N/A	

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General product information:

SEL-32 and SES-32 have similar constructions, differences between the two models are the size and display functions. SES-32 has the basic charging functions with display screen, and SEL-32 has more optional functions with available touch screen and optional functions. Details as follows:

1. Rated supply voltage: 230VAC
2. Operation Frequency: 50Hz/60Hz
3. Rated output current: 32A
4. Rated Output power: 7.2kW
5. IP Degree: IP54 (Mated with vehicle)
IP55 (Storage)
6. Operation Temperature/ Humidity : -20°C~50°C / 5%~95%
7. Altitude during operation: < 2000m
8. Mass of equipment: SEL-32 8kg
SES-32 6kg
9. Dimension: 314×454×135mm(SEL-32)
237×343×115mm(SES-32)

IEC 61851-1			
Clause	Requirement + Test	Result - Remark	Verdict
5	Rating of the supply voltage		P
	Equipment operates as intended within a supply voltage tolerance of $\pm 10\%$	AC 230V $\pm 10\%$	P
	Equipment operates as intended within a frequency tolerance of $\pm 1\%$	50Hz $\pm 1\%$	P
6	General System Requirements and Interface		P
6.1	General Description		P
	Method of charging uses an on-board charger		P
	Method of charging uses an off-board charger		N/A
6.2	EV Charging Modes		P
	Residual current device at least equivalent to type A is provided	Type A RCD used See Attachment 2 for the acceptance report.	P
	Standard used for residual current device..... :	EN61008	P
	Overcurrent protection provided	With installation requirement of circuit breaker in the specification.	P
	Mode of charging used..... :	Mode 3	P
6.3.1	Types of EV Connection		P
	Case "A1" Connection..... :		—
	Case "A2" Connection..... :		—
	Case "B1" Connection..... :		—
	Case "B2" Connection..... :		—
	Case "C" Connection..... :	Case C connection	P
6.3.2	Cord extension sets not provided	No cord extension sets provided.	P
	Vehicle instructions indicate no cord extensions		P
	Cable assembly provided cannot be used as a cord extension		P
6.3.3	Adapters are not provided with the EVSE and are not intended to be used	No adapter provided	P
6.4	Functions provided in each charging mode	Refer to test plan record	P
6.4.3	Mandatory Functions		
6.4.3.1	Verification of properly connected vehicle	Operating under normal operation conditions. Pilot function checking simulator is connected.	P

IEC 61851-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.3.2	Continuous protective earth conductor integrity check performed	No output when the protective earth conductor opened.	P
6.4.3.3	Energization of the system	No output when CP conductor remaining open.	P
6.4.3.4	De-energization of the system	EUT output decrease to zero.	P
6.4.4	Optional Functions		N/A
6.4.4.1	Determination of ventilation requirements during charging		N/A
6.4.4.2	Detection/adjustment of the real time available load current of the supply equipment		N/A
6.4.4.3	Retaining/releasing of the coupler		N/A
6.4.4.4	Selection of charging rate		N/A
6.4.4.5	Control of bi-directional power flow to and from the vehicle		N/A
6.4.5	Details of Pilot Function		P
	Mode 2, 3, or 4 – Control pilot is required	Control pilot function provided	P
	The control pilot is capable of performing all mandatory functions in 6.4.3		P
	Control pilot is capable of performing the functions in 6.4.4.1 and/or 6.4.4.2		P
	Control pilot contributes to the function in 6.4.4.3 and 6.4.4.4		P
6.5	Serial data communication		N/A
	Serial communication provided		N/A
	Serial communication shielded or earthed twisted pair		N/A
7	Protection against electric shock		P
7.1	General Requirements		P
	Hazardous live parts are not accessible		P
	Exposed conductive parts not live under normal conditions		P
	Exposed conductive parts not live under single fault conditions		P
7.2	Protection against direct contact		P
7.2.1	One or more provisions prevent contact.....:		P

IEC 61851-1			
Clause	Requirement + Test	Result - Remark	Verdict
7.2.2	Accessibility of live parts	No access with test finger to any parts with hazardous voltage. The test pin could not touch hazardous voltage.	P
	Hazardous live parts are not accessible before or after removal of parts not requiring a tool for removal		P
	Accessibility with finger probe does not allow contact with hazardous live parts		P
7.2.3	Stored energy – discharge of capacitors	Permanent connection to main Power Supply.	N/A
7.2.3.1	Disconnection of EV		N/A
	Voltage after 1 second		—
	Stored energy available.....		—
	Warning label provided		N/A
7.2.3.2	Disconnection of EVSE		N/A
	Voltage after 1 second		—
	Stored energy available.....		—
	Warning label provided		N/A
7.3	Fault Protection		
	One or more provisions prevent contact.....		P
7.4	Supplementary Measures		
	A residual current device is provided	See appended table 7.3	P
	An isolation monitor is provided		N/A
7.5	Provisions for mode 4 EVSE		N/A
	Complies with IEC 61851-23	EVSE is not a DC charger, and IEC 61851-23 does not apply.	N/A
7.6	Additional requirements		P
	System is designed to limit harmonics, dc, and sinusoidal currents that could affect residual current devices or other equipment	Fault condition tests were completed.	P

8	Connection between the power supply and the EV		P
8.1	General		P
	Type of interface being used.....	Type 2 in IEC 62196-2	P
8.2	Contact Sequencing		P

IEC 61851-1			
Clause	Requirement + Test	Result - Remark	Verdict
	During connection - Earth connection is made first and the pilot connection made last; During disconnection - pilot connection breaks first and earth connection breaks last		P
8.3	Functional description of a standard interface		N/A
	Standard earthing type plug, socket outlet and coupler used for mode 1, 2, or 3.		N/A
8.4	Functional description of a basic interface		P
	Standard physical configuration for single phase		P
	Standard physical configuration for three phase.		N/A
	Electrical ratings comply with Table 1	The connector is AC 250V, 32A	P
	Inlet intermateable with the single phase and three-phase connector or both. Not mateable with the universal type	No inlet exists on the EV Charger.	N/A
8.5	Functional description of a universal interface		N/A
	Universal interface intermateable with either high power ac or high power dc connector		N/A
	Means provided to ensure dc power connector cannot be mated with ac inlet and vice versa		N/A
	Electrical ratings comply with level 1		N/A
9	Specific requirements for inlet, connector, plug and socket outlet		P
9.1	General requirements		P
	Standard interface complies with IEC 60309-1, IEC 60309-2, or IEC 60884-1 (Case "A1" and "B1")		N/A
	EVSE complies with IEC 62196-1		P
	Basic and universal interface complies with IEC 62196-1	Approved Connector with basic interface	P
9.2	Operating temperature		P
	Operating temperature as defined in the applicable IEC standard from 9.1		P
9.3	Service life of inlet/connector and plug/socket outlet		P
	Requirements are as defined in the applicable IEC standard from 9.1		P
9.4	Breaking Capacity		P
	Mode 2 or Mode 3 charging has sufficient breaking capacity or provided with a switch with sufficient breaking capacity.....	Approved Connector with basic interface	P

IEC 61851-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Avoidance of disconnection under load provided by specific means	Warning provided on the marking label.	P
	Mode 4 charging does not break load	Mode 3	N/A
	Test for Modes 2, 3, or 4 in accordance with IEC 62196-1	Approved Connector with basic interface	P
9.5	IP Degrees		P
	Complies with 11.3	The connect is comply with IP54	P
9.6	Insertion and Extraction Forces		P
	Complies with IEC 62196-1	Approved Connector with basic interface used.	P
	For Connection Case "A1" or "B1" complies with the relevant standard		N/A
9.7	Latching of the retaining device		N/A
	Latching device provided	Warning provided on the marking label.	N/A
	Separation of connector and inlet while contacts are live is prevented by latching device		N/A

10	Charging Cable Assembly Requirements		P
10.1	Electrical Rating		P
	Rated voltage of conductors corresponds to rated voltage of connector		P
	Rated current of connectors and conductors corresponds to rating of overcurrent protection		P
10.2	Electrical characteristics		P
	Voltage and current ratings of the cable are compatible with the ratings of the EVSE		P
	Cable insulation is wear resistant and maintains flexibility over the full ambient range	Comply with 2PFG1908/05.12	P
10.3	Dielectric Withstand Characteristics		P
	Complies with 11.4	Meet the requirements	P
10.4	Mechanical Characteristics		P
	Meets or exceeds the characteristics specified in IEC 60245-6	Comply with 2PFG1908/05.12	P
	Cable is fire resistant	Considered in the standard	P
	Cable withstands chemical exposure	Considered in the standard	P
	Cable is rated for UV exposure	Considered in the standard	P

IEC 61851-1			
Clause	Requirement + Test	Result - Remark	Verdict
11	EVSE Requirements		P
11.1	General Test Requirements		P
	Tests performed in an ambient of 20°C ± 5°C unless otherwise specified		P
	AC charging stations comply with IEC 61851-22		P
11.2	Classification		P
	EVSE is considered indoor use only		N/A
	EVSE is considered indoor/outdoor use		P
11.3	IP Degrees for basic and universal interfaces	When storage is IP55	P
11.3.1	IP Degrees for ingress of objects		P
	Indoor Use (IP) :	Indoor use/outdoor use	—
	Vehicle inlet mated with connector is IP 21		N/A
	Connector for Case “C” when not connected is IP 21		N/A
	Outdoor Use (IP) :		—
	Vehicle inlet mated with connector is IP 44	Vehicle inlet mated with connector is IP 54	P
	All Cable Assemblies..... :		—
	Inlet in “road” position is IP 55 with or without assistance from vehicle design.....:	No inlet on the equipment.	N/A
	Connector when not mated is IP 24	Connector when not mated is IP54	P
11.3.2	Protection against electric shock		P
	Vehicle inlet mated with connector is IP XXD	IP54	P
	Connector for Mode 1 not connected is IP XXD		N/A
	Connector for Mode 2 an Mode 3 not connected is IP XXB	IP55	P
11.4	Dielectric Withstand Characteristics		P
11.4.1	Dielectric Withstand Voltage		P
	No breakdown indicated	See appended Table 11.4.1	P
11.4.2	Impulse dielectric withstand		P
	No breakdown indicated	See appended Table 11.4.2	P
11.5	Insulation Resistance		P
	Insulation resistance measurement is greater than 1 MΩ	See appended Table 11.5	P
11.6	Clearance and Creepage Distances		P

IEC 61851-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Clearance and Creepage Distances meet the minimum values	See appended Table 11.6	P
11.7	Leakage – Touch Current		P
	Leakage current does not exceed 3.5 mA	15.4µA See appended Table 11.7	P
11.8	Environmental Tests		P
11.8.1	General		P
	Equipment meets the original requirements after each test		P
11.8.2	Ambient air temperature		P
	Manufacturer's rated ambient temperature range (°C)..... :	-20°C to +50°C (Operating) -40°C to +70°C (Storage)	P
	Equipment operates as intended within full range of ambient temperatures		P
11.8.3	Ambient Humidity		P
	Test in accordance with IEC 60068-2-78, test Ca, at 40 °C ± 2 °C and 93% relative humidity for four days (IEC 61851-22) :	See attachment for details	P
	Test in accordance with IEC 60068-2-30, test Db, at 40 °C ± 2 °C for 6 cycles (IEC 61851-22) :	Above test is selected	N/A
11.8.4	Ambient Air Pressure		P
	Designed for operation between 860 hPa and 1060 hPa		P
11.9	Permissible Surface Temperature		P
	Temperature limits on surfaces are not exceeded	See appended Table 11.9	P
11.10	Environmental Conditions		P
	EVSE is designed to resist the effects of automotive solvents..... :	According to CTL decision PDSH 1092 this test is not applicable.	N/A
	EVSE is designed to resist the effects of automotive fluids..... :	According to CTL decision PDSH 1092 this test is not applicable.	N/A
	EVSE is designed to resist the effects of vibration. :	According to CTL decision PDSH 1092 this test is not applicable.	N/A
	EVSE is designed to resist the effects of shock..... :	According to CTL decision PDSH 1092 this test is not applicable.	N/A
	EVSE is designed to meet material flammability standards :	Meet the requirements	P

IEC 61851-1			
Clause	Requirement + Test	Result - Remark	Verdict
11.11	Mechanical Environmental Tests		P
11.11.2	Mechanical Impact	IK 08	P
	No damage to the enclosure, and no access to internal live parts after impact		P
11.12	Electromagnetic Compatibility tests		P
	Emission testing complies with IEC 61000-6-3	Declaration provided by client	P
	Immunity testing complies with IEC 61000-6-1	Declaration provided by client	P
11.13	Latching of the retaining device		N/A
	Latching device used to prevent disconnection under load	Warning label provided for preventing disconnection under load	N/A
11.14	Service		P
	Parts are designed such that they can be removed, serviced and replaced when necessary		P
11.15	Marking and Instructions		P
11.15.1	Connection Instructions		P
	Instructions for proper connection of the vehicle to the EVSE shall appear in the vehicle manual		P
	Instructions for proper connection of the vehicle to the EVSE shall appear in the owner's manual		P
	Instructions for proper connection of the vehicle to the EVSE shall appear on the EVSE product		P
11.15.2	All marking comply with the legibility requirements after the rub tests		P
11.15.3	Marking of Electric Vehicle Charging Station		P
	The EVSE product is marked with all relevant information	Refer to marking label	P
	Name of manufacturer.....:	DUOSIDA	P
	Model number.....:	SEL-32, SES-32	P
	Serial number	10000001	P
	Date of manufacturer.....:	218.03.20	P
	Rated voltage (V).....:	230V	P
	Rated frequency (Hz)	50/60Hz	P
	Rated current (A)	32A	P
	Number of phases	Single phase	N/A
	IP Degrees	IP 54 (Mated with connector) IP 55 (Storage)	P

IEC 61851-1			
Clause	Requirement + Test	Result - Remark	Verdict
	"Indoor use Only" if the product is intended for indoor use only		N/A
	Class II stations marked with Class II symbol		N/A
11.16	Telecommunication Network		N/A
	Telecommunication networks comply with IEC 60950-1		N/A

Annex A	Pilot Function Through a Control Pilot Circuit Using PWM Modulation and a Control Pilot Wire		P
	EVSE communication protocol used pulse width modulation on the control pilot.		P
	Communication protocol aligns with the parameters in Annex A		P

IEC 61851-22			
Clause	Requirement + Test	Result - Remark	Verdict
5	Standard Conditions for Operation in Service and for Installation		P
	Operating ambient is between - 30°C and + 50°C (IEC 61851-22)	-20°C ~ +50°C	P
	Relative humidity is between 5% and 95% (IEC 61851-22)	5%~95%	P
6	Rating of the A.C. input and output		P
	Output rating Option A, B, or C applies to the product (IEC 61851-22)..... :	Output option B or A used.	P
7	General Test Requirements		P
	Clause 11.1 of part 1 applied :		P
8	Functional and Constructional Requirements		P
8.1	For mode 3 charging, the charge station provides part of the control functions listed in 6.4 of Part 1 (IEC 61851-22)		P
8.2	Emergency Service		N/A
	Disconnect device provided (IEC 61851-22)		N/A
	Provided with a means to prevent accidental operation of the disconnect device (IEC 61851-22)		N/A
8.3	Permissible Surface Temperatures		P
	Clause 11.9 of part 1 applied		P
8.4	Charging Station Protection Degree (IP)		P
	Clause 11.3 of part 1 applied	IP54	P
8.5	Storage Means for the Cable Assembly		N/A
	Storage means for cable assembly (IEC 61851-22)		N/A
	Storage means for vehicle connector (IEC 61851-22)		N/A
	Indication means for proper storage (IEC 61851-22)		N/A
8.6	Location of the Socket-Outlet and Storage Means for the Connector		P
	Lowest part of socket outlet (Case A or Case B Connections) or the lowest part of storage means for the vehicle connector (Case C Connection) between 0.4 m and 1.5 m above ground level (IEC 61851-22)		P
	Height of socket-outlet (mm) :	0.4m ~ 1.5m	—
	Height of storage means (mm) :	0.4m ~ 1.5m	—
8.7	Extension Cord, Clause 6.3.2 of part 1 applied		N/A

IEC 61851-22			
Clause	Requirement + Test	Result - Remark	Verdict
8.8	Metering equipment complies with IEC 61036, IEC 62052-11, or IEC 62053-21 (IEC 61851-22)	EN 62052	P

9	Electrical Safety		P
9.1	Protection Against Indirect Contact		P
	Protection required by 7.3 of Part 1 is not automatically reset (IEC 61851-22)		P
	Manual reset is easily accessible (IEC 61851-22)		P
	Optional protection specified in 7.4 of Part 1 may be automatically reset, if in accordance with National Regulations (IEC 61851-22)		P
9.2	Earthing Electrode and Continuity		P
	All dead metal parts connected together, referenced to the main earth connection (IEC 61851-22)		P
	Resistance of earth path less than 0.1 ohms (IEC 61851-22)		P
	Resistance measured.....:		—
9.3	Detection of the Electrical Continuity of the Protective Conductor	Verified by testing	P
	Ground monitor / Interrupter provided for all Mode 3 charging (IEC 61851-22)		P

10	Dielectric Test Requirements		P
10.1.1	Dielectric Withstand Voltage, Clause 11.4.1 of part 1 applied	See appended Table 11.4.1	P
10.1.2	Impulse Dielectric Withstand Clause 11.4.2 of Part 1 applied	See appended Table 11.4.2	P
10.1.3	Insulation Resistance, Clause 11.5 of Part 1 applied	See appended Table 11.5	P
10.2	Touch Current, Clause 11.7 of part 1 applied	See appended Table 11.7	P
10.3	Protection Measures		P
	Protection against overcurrent and overvoltage in accordance with IEC 60364-4-43 and IEC 60364-4-443 respectively (IEC 61851-22)		P
	Protection against overcurrents or short circuits within the device are coordinated with the external protection (IEC 61851-22)		P
10.4	Creepage and Clearance Distances, Clause 11.6 of Part 1 applied	See appended Table 11.6	P

IEC 61851-22			
Clause	Requirement + Test	Result - Remark	Verdict
11	Environmental Tests		P
11.1.2	Ambient Temperature, Cl. 11.8.2 of part 1 applied		P
11.1.3	Dry Heat		P
	Optional – Test in accordance with IEC 60068-2-2, test Bd (IEC 61851-22)		P
	Test temperature (°C)	70°C	—
	Test Duration (hours)	48h	—
11.1.4	Ambient Humidity, Clause 11.8.3 of Part 1 applied		P
11.5	Cold Test		P
	Test in accordance with IEC 60068-2-1, test Ab, at minus 30°C ± °C for 16 hours (IEC 61851-22)	30°C, 16hrs.	P
11.1.6	Ambient Air Pressure, Cl. 11.8.4 of Part 1 applied		P
11.1.7	Solar Radiation		N/A
	Optional – Test in accordance with IEC 60068-2-5, test Sa, procedure B for one cycle (IEC 61851-22)		N/A
11.1.8	Saline Mist		N/A
	Optional – Test in accordance with IEC 60068-2-52, test Kb, severity one (IEC 61851-22)		N/A
11.2	Mechanical Environmental Tests		P
11.2.2	Mechanical Impact, Clause 11.11.2 of part 1 applied		P
11.2.3	Stability		N/A
	Test – 500 N applied for 5 minutes at top of device, in all four directions or worst case direction (IEC 61851-22)	Considered at final installation	N/A
	Deformation during load (mm).....		—
	Deformation after load (mm).....		—
11.3	Electromagnetic Environmental Tests, Clause 11.12 of part 1 applied	Clause 11.12 of part 1	P
12	Specific Socket-Outlet / Connector Requirements		P
	Clause 9 Part 1 applied		P
13	Classification		P
	Class 1 or Class 2 (IEC 61851-22)	Class 1	P
14	Marking and Instructions		P
	Clause 11.15 of Part 1 applied		P

IEC 61851-1 & IEC 61851-22			
Clause	Requirement + Test	Result - Remark	Verdict

Table 11.4.1		TABLE: Dielectric Strength	
Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)	
Common Mode			
Between L+N and PE	2000	No	
Between L+N and enclosure	4000	No	
Between L+N and CP	4000	No	
Differential Mode			
Input to and enclosure	4000	No	
Output to and enclosure	4000	No	
Input and PE	2000	No	
Output and PE	2000	No	
Supplementary information: All SPD functional should be disconnected during test. The test shall be conducted for five impulses of each polarity with an interval of at least 1 s between impulses			

Table 11.9		TABLE: Heating Test	
	Test voltage (V)	230V	—
	Ambient (oC)	40 oC	—
Thermocouple Locations	Max. temperature measured, (oC)	Max. temperature limit, (oC)	
Input Terminal block	67.8	--	
Output Terminal	67.5	--	
Relay 1	72.4	--	
Relay 2	72.2	--	
T1	70.4	--	
SMPS	73.0	--	
C115	62.1	--	
CX1	63.9	--	
F1	67.8	--	
TNR1-U2	65.1	--	
RT1	65.6	--	
Current transformer	55.2	--	
EV connector	48.6	--	
EV cable	52.3	--	
Power cord	58.3	--	

IEC 61851-1 & IEC 61851-22			
Clause	Requirement + Test	Result - Remark	Verdict
Enclosure inside	49.5		--
Enclosure outside	48.0		--
Button	45.8		--
Main PCB	64.0		--
Control PCB	59.6		--
Ambient temperature	41.7		--
Surface screen	49.7		--
Enclosure background	47.7		--
Supplementary information: Test was operated under 25 oC environment, the measured temperature was added 15 oC to match the 40 oC requirement.			

Table 11.5 TABLE: Insulation Resistance		
Test voltage applied between:	Test potential applied (V)	Insulation Resistance (MΩ)
All inputs/outputs connected together (power source included) and the accessible parts	500V d.c.	>100
Input and output	500V d.c.	>100
Input to exposed conductive parts	500V d.c.	N/A
Output to exposed conductive parts	500V d.c.	N/A
Supplementary information: The measurement of insulation resistance shall be carried out after applying the test voltage during 1 min. For Class I R>1 MΩ; for Class II R>7MΩ		

Table 11.4.2 TABLE: Impulse Dielectric Withstand		
Test voltage applied between:	Test potential applied (V)	Breakdown / flashover (Yes/No)
Between L+N and PE	4000	No
Between L+N and enclosure	4000	No
Between L+N and CP	4000	No
Supplementary information: All the SPD functional is disconnected during test. The test shall be conducted for five impulses of each polarity with an interval of at least 1 s between impulses		

Table 11.6 TABLE: Clearance And Creepage Distance Measurements						
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)
L-N		250	1.5	44.83	2.5	44.83
Two poles of F1		250	1.5	4.35	2.5	4.35

IEC 61851-1 & IEC 61851-22						
Clause	Requirement + Test			Result - Remark		Verdict
L – earth		250	1.5	4.31	2.5	4.31
N – earth		250	1.5	3.9	2.5	3.9
L/N –CP wire		250	3.0	6.19	5.0	6.19
L/N – enclosure surface		250	3.0	45.5	5,0	54.3
PRI - SEC of C1		250	3.0	5.64	3.0	5.64
PRI - SEC of photocouplers PC1		250	3.0	6.52	3.0	16.39
PRI - SEC of T1 on PCB		250	3.0	6.21	3.0	6.21
PRI - SEC of T1 inside		250	3.0	10.81	3.0	17.72
PRI - SEC trace		250	3.0	3.76	3.0	3.76
PRI - SEC of Photocouplers PC2		250	3.0	9.8	3.0	15.03
L67- SEC of T1 (on the PCB back side)		250	3.0	7.6	3.0	7.6
Supplementary information:						

Table 11.7	TABLE: Touch Current Measurements					P
Switch "S" Connected To:	Switch "E" Position	Polarity P1 / Primary Switch Position				
		Normal / On	Normal / Off	Reverse On	Reverse Off	
Supplementary information: Between any network poles and accessible metal parts and metal foil covering insulated external parts tested with the value: 0.0154mA						

