Thank you for giving UL the opportunity to partner with you.
Please note, Follow-Up Procedure Revisions or Report Revisions do not include Authorization Pages, Indices, Section General, and/or Appendices unless revisions were required or requested.

Should you have any questions, after reviewing the material, or need to report any inaccuracies, please reach out to your UL representative or find UL contact details for your local Customer Service Department at https://www.ul.com/about/locations.

Please find attached the related material on Project 4791212506

For your convenience, the below describes the related updates:

E520412-vol1-Index
E520412-20210813-CertificateofCompliance
E520412-20210813-Description
Figure-9-Total
Illustration-47-Total
E520412-20210813-TestRecord

Times change, Trust Remains™

INDEX

USR – United States Standard, Recognized
CNR – Canadian Standard, Recognized

Certificate of Compliance

Certificate Number:
UL-US-2139440-1

Report Reference:
E520412-20210813

Issue Date:
2025-01-16

Issued to:

Jiangsu Yihang Electric Science and Technology Co., Ltd.
No.262, Moral Education Road, Hongshan Street, Xinwu District,
Wuxi city, Jiangsu 214145
China

This certificate confirms that representative samples of:
FFVI2 - Electric Vehicle Plugs, Receptacles and Couplers - Component

See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

UL 2251, 4th Ed., Issue Date: 2017-11-20

Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Recognized Component Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

David Piecuch
UL Mark Certification Program Owner

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact UL Solutions Customer Service at https://www.ul.com/contact-us.

CERTIFICATE OF COMPLIANCE

Certificate number UL-US-2139440-1
Report reference E520412-20210813
Date 2025-01-16

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Model	Product Description
WB-SC-AC1.0-16AS	Vehicle Connector
WB-SC-AC1.0-32AS	Vehicle Connector
WB-SC-AC1.0-40AS	Vehicle Connector
WB-SC-AC1.0-48AS	Vehicle Connector
WB-SC-AC1.1-48AS	Vehicle Connector

Certificate of Compliance

Certificate Number:
UL-CA-2133034-1

Report Reference:
E520412-20210813

Issue Date:
2025-01-16

Issued to:

Jiangsu Yihang Electric Science and Technology Co., Ltd.
No.262, Moral Education Road, Hongshan Street, Xinwu District,
Wuxi city, Jiangsu 214145
China

This certificate confirms that representative samples of:
FFVI8 - Electric Vehicle Plugs, Receptacles and Couplers Certified for Canada - Component

See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

CSA C22.2 NO. 282-17, 2nd Ed., Issue Date: 2017-11-20, Revision Date: 2018-04

Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Recognized Component Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

David Piecuch
UL Mark Certification Program Owner

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact UL Solutions Customer Service at https://www.ul.com/contact-us.

CERTIFICATE OF COMPLIANCE

Certificate number UL-CA-2133034-1
Report reference E520412-20210813
Date 2025-01-16

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Model	Product Description
WB-SC-AC1.0-16AS	Vehicle Connector
WB-SC-AC1.0-32AS	Vehicle Connector
WB-SC-AC1.0-40AS	Vehicle Connector
WB-SC-AC1.0-48AS	Vehicle Connector
WB-SC-AC1.1-48AS	Vehicle Connector

File E520412
Project 4789786382

August 13, 2021

REPORT

on

COMPONENT - ELECTRIC VEHICLE PLUGS, RECEPTACLES AND COUPLERS

JIANGSU YIHANG ELECTRIC SCIENCE AND TECHNOLOGY CO LTD
JIANGSU, CHINA

DESCRIPTION

PRODUCT COVERED:

USR, CNR - Component, Connector for Electric Vehicles, Models WB-SC-AC1.0-16AS, WB-SC-AC1.0-32AS, WB-SC-AC1.0-40AS, WB-SC-AC1.0-48AS, **WB-SC-AC1.1-48AS**.

GENERAL

These are SAE J1772 compliant, multi-pole grounding type devices employing crimp-type **or ultrasonic welding-type** contacts for power, **crimp-type contacts for** control pilot and communications (optional) circuits. They are intended to supply AC power to an electric vehicle for the purpose of charging the vehicle batteries. The mating inlet, intended to be installed on an electric vehicle and connected to the vehicle wiring harness, was not evaluated as part of this investigation.

The vehicle connectors are provided with enclosures rated Type 3R in the mated position and may be used either indoors or outdoors.

RATINGS:

Connector Cat. No.	Rating		Wire Size
	Voltage	Current	
WB-SC-AC1.0-16AS	120/240 Vac	16 A	Power - 14 AWG (2 provided) GND - 14 AWG (1 Provided) Signal – 18 AWG (1 provided)
WB-SC-AC1.0-32AS	120/240 Vac	32 A	Power - 10 AWG (2 provided) GND - 10 AWG (1 Provided) Signal – 18 AWG (1 provided)
WB-SC-AC1.0-40AS	120/240 Vac	40 A	Power - 9 AWG (2 provided) GND - 9 AWG (1 Provided) Signal – 18 AWG (1 provided)
WB-SC-AC1.0-48AS	120/240 Vac	48 A	Power – 8 AWG (2 provided) GND - 10 AWG (1 Provided) Signal – 16 AWG (1 provided)
WB-SC-AC1.1-48AS	**120/240 Vac**	**48 A**	**Power – 8 AWG (2 provided) GND - 10 AWG (1 Provided) Signal – 22 AWG (4 provided)**

Pilot contacts are rated 2 A, 30 Vdc.

Ambient temperature rating: -40°C to +50°C.

MODEL DIFFERENCES:

The Cat. Nos. WB-SC-AC1.0-16AS, WB-SC-AC1.0-32AS, WB-SC-AC1.0-40AS are identical to Cat. No. WB-SC-AC1.0-48AS, except for Contact Terminals, Strain Relief, Cable Clamp, Rear Housing, EV cable and current rating.

The Cat. No. WB-SC-AC1.1-48AS is identical to Cat. No. WB-SC-AC1.0-48AS, except for EV Cable, temperature sensor and Power Contact Terminals.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by UL LLC.

USR – Products designated USR have been investigated using US requirements as noted in the Test Record.

CNR – Products designated CNR have been investigated using Canada requirements as noted in the Test Record.

Conditions of Acceptability - The following are among the considerations to be made when evaluating the device in the end-use product.

1. Interruption of Current - This device has not been tested for interrupting the flow of current by connecting or disconnecting the mating connector. If the device will be routinely connected or disconnected under load in the end-use application, tests to evaluate the device's ability to withstand the resulting electrical arc should be considered. The number of make-and-break cycles, the supply voltage and power factor, and the current carried by each pole of the device in the test are to be developed based upon the conditions that will be presenting in the end-use. This device should be used where the power contacts will not interrupt current.

2. Pilot Contacts - These devices have been tested for 110 percent make and break cycles of interrupting a current by connecting and disconnecting the mating connector in accordance with the Electromagnetic test. The devices should be used with equipment employing a control pilot circuit, having a current interrupting rating not less than the vehicle inlet or vehicle connector rating. The control pilot circuit shall function to ensure that the interrupting device opens the power circuit before the power contacts break.

3. *Insulating Materials — The insulating materials used in this device has been investigated for their Relative Thermal Index (Electrical and Mechanical with Impact), Flame Rating, Hot Wire Ignition, High Current Arc Resistance to Ignition and Comparative Tracking Index, and comply with the requirements stated in Section 8 of the standard stated in the Test Record. The maximum operating temperature for any connector shall not exceed the rated operating temperature that is based on the Relative Thermal Index of the material. Materials used for the enclosure of a device comply with the requirements for exposure to outdoor weather conditions (ultraviolet light exposure, water exposure and immersion) as stated in Section 10 of the standard stated in the Test Record.

*4. Terminations - The wiring terminations of the vehicle connector employ crimp-type **or ultrasonic welding-type** terminations that have been subjected to the Conductor Secureness and Pullout tests from the standard stated in the Test Record. See ILL. 40 **and ILL. 40A** for Crimp Tool and Die details.

5. Configuration and Mating - These devices employ polarized contact slots but the terminals are not identified.

6. Outdoor Use – The connector and mating inlet have been evaluated for an enclosure rating of Type 3R in accordance with Section 54 of the standard stated in the Test Record.

7. These devices have been evaluated for Short Circuit Tests at 5000 A with fuse rated below. If used with another type of protection in the end product, testing should be repeated with the specific protection device used in the end product.

Cat. No.	Rated Current of fuse, A
WB-SC-AC1.0-16AS	70 A
WB-SC-AC1.0-48AS	200 A

8. Compliance to National Electrical Code for Cable length of EV cable should be evaluated at the end use application.

9. These devices were provided with specific cables - R/C (FFSO2/8), type EVH2001. The insulation and jacket thickness are thinner than required. Final acceptance of the suitability should be considered in the end-use application.

10. The temperature sensors have not been evaluated with these devices. There is no reliable insulation between AC contact and temperature sensor. Temperature sensor circuit is considered to be same as AC power (240 Vac) circuit. Sensor circuit shall be isolated from other control circuit in end product. Final acceptance of the suitability should be considered in the end-use application.

CONSTRUCTION DETAILS:

Spacings - Minimum clearances of 1.5 mm provided through air between live parts of opposite polarity and between live metal parts and exposed dead metal parts and a minimum spacing (creepages) of 4.0 mm provided over surface between live parts of opposite polarity and between live metal parts and exposed dead metal parts for devices rated 240 V or less. Section 12 of the standard stated in the Test Record, Overvoltage Category II, Pollution Degree 3, Material Group IIIa.

Marking – The device shall be legibly marked, where visible after installation, laser printed on the device.

a) Recognized Company name, trade name, trademark, or other descriptive marking by which the organization responsible for the product may be identified.

b) The catalog number or an equivalent designation.

c) The electrical rating in both volts and amperes.

d) ac or dc or both as applicable.

e) A device enclosure type designation, “Type 3R”.

f) UL/cUL recognition mark.

g) Ambient temperature rating: -40°C to +50°C.

*
The following shall be provided on the device or on the smallest unit container or carton or on a stuffer sheet in the smallest unit container or carton:

a) “CAUTION - Risk of Electric Shock, Do Not Disconnect Under Load”, “CAUTION - Not for current interrupting” or “CAUTION - For disconnecting use only”, or an equivalent statement following the word "CAUTION".

Refer to the following photos and descriptive indices for construction details.

Index to Figures:

Fig. No.	Description
1~4	Connector External View
5,6	Connector Internal View
7	Alternate Micro Switch Housing View
8	**Connector Internal View, Model WB-SC-AC1.1-48AS**
9	**Welding-type power contact terminal**

Index to Illustrations:

Ill. No.	Description
1&1A	Connector Overall View
2	Connector Housing
2A	Alternate Connector Housing
3	Connector Plug
4	Connector Pin Cover
5	Connector Terminal Holder
6	Connector Top Housing
7	Connector Housing Gasket, Rear Housing Gasket
8	Connector Plug Gasket
9	Connector Dust Cap
10	Connector Power Contact Terminals, Model WB-SC-AC1.0-16AS
11	Connector Power Contact Terminals, Model WB-SC-AC1.0-32AS
12	Connector Power Contact Terminals, Model WB-SC-AC1.0-40AS
13	Connector Power Contact Terminals, Model WB-SC-AC1.0-48AS
13A	**Alternate Power Contact Terminals, Models WB-SC-AC1.0-16AS, Model WB-SC-AC1.0-32AS, Model WB-SC-AC1.0-40AS, Model WB-SC-AC1.0-48AS, Model WB-SC-AC1.1-48AS**
14	Connector Ground Contact Terminal, Model WB-SC-AC1.0-16AS
15	Connector Ground Contact Terminal, Model WB-SC-AC1.0-32AS and WB-SC-AC1.0-48AS, **WB-SC-AC1.1-48AS**
16	Connector Ground Contact Terminal, Model WB-SC-AC1.0-40AS
17	Reserved for future use
18	Connector Signal Contact Terminals, Models WB-SC-AC1.0-16AS, WB-SC-AC1.0-32AS, WB-SC-AC1.0-40AS
19	Connector Signal Contact Terminals, Model**s** WB-SC-AC1.0-48AS, **WB-SC-AC1.1-48AS**
20	Connector Terminal O-Ring
21	Connector Latch
22	Connector Axis
23	Connector Spring
24	Connector Internal Wire Connection **Models WB-SC-AC1.0-16AS, Model WB-SC-AC1.0-32AS, Model WB-SC-AC1.0-40AS, Model WB-SC-AC1.0-48AS**
24A	**Connector Internal Wire Connection, Model WB-SC-AC1.1-48AS**

Index to Illustrations (Cont'd):

* CONNECTOR, Cat. No. WB-SC-AC1.0-48AS - FIGs. 1 thru 7, 9, ILL. 1

* General – FIGs. 1 thru 7 **and** 9 and ILL. 1 depict the overall view of Cat. No. WB-SC-AC1.0-48AS. The general design, shape and arrangement shall be as illustrated. Also represents Cat. Nos. WB-SC-AC1.0-16AS, WB-SC-AC1.0-32AS, WB-SC-AC1.0-40AS unless otherwise specified.

1. Housing – R/C (QMFZ2/8), IDEMITSU KOSAN CO LTD (E48268), Type ZG1950(bb)(f1), all color, minimum thickness of 2.0 mm, rated V-1, HWI=2, HAI=1, CTI=3, RTI=125˚C. One-piece construction. See ILL. 2 for overall dimensions.

   Alternate Housing – R/C (QMFZ2/8), IDEMITSU KOSAN CO LTD (E48268), Type ZG1950(bb)(f1), all color, minimum thickness of 2.0 mm, rated V-1, HWI=2, HAI=1, CTI=3, RTI=125˚C. One-piece construction. See ILL. 2A for overall dimensions.

2. Plug – R/C (QMFZ2/8), LATI INDUSTRIA TERMOPLASTICI SPA (E54080), PA66, Type LATAMID 66 H2 G/25-V0KB3 (q) (r) (f1), black or grey, minimum 1.75 mm thick, rated V-0, HWI=HAI=CTI=0, RTI=100˚C. Secured to Housing by physical fit and a ST2.9*8 screw. See ILL. 3 for overall dimensions.

3. Pin Cover – R/C (QMFZ2/8), LATI INDUSTRIA TERMOPLASTICI SPA (E54080), PA66, Type LATAMID 66 H2 G/25-V0KB3 (q) (r) (f1), black or grey, minimum 1.0 mm thick, rated HB, HWI=2, HAI=0, CTI=0, RTI=100˚C. Physically fit into Plug. See ILL. 4 for overall dimensions.

4. Terminal Holder – R/C (QMFZ2/8), LATI INDUSTRIA TERMOPLASTICI SPA (E54080), PA66, Type LATAMID 66 H2 G/25-V0KB3 (q) (r) (f1), black or grey, minimum 0.9 mm thick, rated HB, HWI=2, HAI=0, CTI=0, RTI=100˚C. Secured to Pin Cover by a ST2.9*8 screw. See ILL. 5 for overall dimensions.

5. Top Housing – R/C (QMFZ2/8), IDEMITSU KOSAN CO LTD (E48268), Type ZG1950(bb)(f1), all color, rated V-1, 125˚C, minimum thickness 2.0 mm. Secured to Housing by two ST1.9*6 screws. See ILL. 6 for overall dimensions.

6. Housing Gasket - R/C (QMFZ2/8), SHIN-ETSU SILICONE INTERNATIONAL TRADING (SHANGHAI) CO LTD (E360537), SIR, Type CHN-6(Y)00@(f1), black color, rated HB, 150˚C, ID 40 mm, 1.8 mm thick. Located in outer slot of Plug. See ILL. 7 for overall dimensions.

7. Plug Gasket - R/C (QMFZ2/8), SHIN-ETSU SILICONE INTERNATIONAL TRADING (SHANGHAI) CO LTD (E360537), SIR, Type CHN-6(Y)00@(f1), black color, rated HB, 150˚C, minimum thickness of 1.0 mm. Located in inner slot of Plug. See ILL. 8 for overall dimensions.

8. Dust Cap - R/C (QMFZ2/8), SHIN-ETSU SILICONE INTERNATIONAL TRADING (SHANGHAI) CO LTD (E360537), SIR, Type CHN-6(Y)00@(f1), black color, rated HB, 150˚C. See ILL. 9 for overall dimensions.

9. Terminals – Crimp type, silver plated copper alloy. Fitted into Terminal Holder. See table below for different dimensions.

Alternate Power Contact Terminals – ultrasonic welding-type, silver and nickel plated copper alloy. See ILL. 13A for dimensions.

Cat. No.	Contact Terminals	Number of Terminal	Wire Size	ILL. No.
WB-SC-AC1.0-16AS	Power	2	14 AWG	10 or 13A
	PE	1	14 AWG + 20 AWG	14
	Signal(CP)	1	18 AWG	18
	Signal(CS)	1	20 AWG	18
WB-SC-AC1.0-32AS	Power	2	10 AWG	11 or 13A
	PE	1	10 AWG + 20 AWG	15
	Signal(CP)	1	18 AWG	18
	Signal(CS)	1	20 AWG	18
WB-SC-AC1.0-40AS	Power	2	9 AWG	12 or 13A
	PE	1	9 AWG + 20 AWG	16
	Signal(CP)	1	18 AWG	18
	Signal(CS)	1	20 AWG	18
WB-SC-AC1.0-48AS	Power	2	8 AWG	13 or 13A
	PE	1	10 AWG + 20 AWG	15
	Signal(CP)	1	16 AWG	19
	Signal(CS)	2	20 AWG	19

10. Terminal O-Ring - R/C (QMFZ2/8), SHIN-ETSU SILICONE INTERNATIONAL TRADING (SHANGHAI) CO LTD (E360537), SIR, Type CHN-6(Y)00@(f1), black color, rated HB, 150°C. One provided for each terminal. Secured into integral slot in terminal. See ILLs. 20 for overall dimensions for different terminals.

11. Latch – R/C (QMFZ2/8), IDEMITSU KOSAN CO LTD (E48268), Type ZG1950(bb)(f1), all color, rated V-1, 125°C, minimum thickness 2.0 mm. See ILL. 21 for overall dimensions.

12. Axis – Stainless Steel, secure Latch to Top Housing. See ILL. 22 for overall dimensions.

13. Spring - Stainless Steel, see ILL. 23 for overall dimensions.

14. Micro Switch – R/C (WOYR2/8), OMRON CORP (E41515), Model D2HW-A201HS, rated 12 Vdc, 2 A, 75 °C, wire size 20 AWG. Secured to Housing.

Alternate Micro Switch – R/C (WOYR2/8), ZING EAR ENTERPRISE CO LTD (E89885), Model G303, rated 12 Vdc, 3 A, 85 °C.

*

15. Internal wires - R/C (AVLV2/8), rated min. 300 V, 105 °C, 20 AWG, Horizontal flame. See ILL. 24 for Internal Wire Connection.

16. Resistors – Two provided, See below for ratings. Connected to each other and internal wires by Splice Connector, then wrapped with heat shrinkable tube.

    a) R1 - Rated 150 ohm, 1/2 W.

    b) R2 - Rated 330 ohm, 1/2 W.

17. Heat Shrinkable Tube – R/C (YDPU2/8), rated min. 300 V, VW-1, 125°C.

18. Splice Connector - Uninsulated Copper alloy, Crimp Tool YJM-201, manufactured by Henan Hongguang Jinggong Electric Co., Ltd. Used to connect the wires and resistors. See ILL. 25 for overall dimension.

19. Rear Housing Gasket – R/C (QMFZ2/8), SHIN-ETSU SILICONE INTERNATIONAL TRADING (SHANGHAI) CO LTD (E360537), SIR, Type CHN-6(Y)00@(f1), black color, rated HB, 150°C, ID 40 mm, 1.8 mm thick. Located in inner slot of Rear Housing. See ILL. 7 for overall dimensions.

20. Cable Clamp - Zinc Alloy, two provided. Secured EV cable to Housing by M3 screws. See ILLs. 26~29 for overall dimensions of different models.

21. Strain Relief - R/C (QMFZ2/8), SHIN-ETSU SILICONE INTERNATIONAL TRADING (SHANGHAI) CO LTD (E360537), SIR, Type CHN-6(Y)00@(f1), black color, rated HB, 150°C. See ILLs. 30~33 for overall dimensions of different models.

22. Rear Housing - R/C (QMFZ2/8), LATI INDUSTRIA TERMOPLASTICI SPA (E54080), PA66, Type LATAMID 66 H2 G/25-V0KB3 (q) (r) (f1), black or grey, minimum 1.1 mm thick, rated V-0, 100°C. Secured to Housing by ST2.9*18 screws. See ILL. 34 (for models WB-SC-AC1.0-16AS, WB-SC-AC1.0-32AS) and ILL. 35 (for models WB-SC-AC1.0-40AS, WB-SC-AC1.0-48AS) for overall dimensions.

23. Electric Vehicle Cable – Listed (FFSO/7), WUXI XINHONGYE WIRE & CABLE CO LTD (E344326), type EVE, rated 600 V, 105°C. Connected to Terminals by crimping. See ILLs. 36~39 for cable spec.

Model	Type	Power Conductor	Ground Conductor	Signal Conductor	Nominal Cable Diameter
WB-SC-AC1.0-16AS	EVE	14 AWG x 2	14 AWG x 1	18 AWG x 1	14.3 mm
WB-SC-AC1.0-32AS	EVE	10 AWG x 2	10 AWG x 1	18 AWG x 1	16.0 mm
WB-SC-AC1.0-40AS	EVE	9 AWG x 2	9 AWG x 1	18 AWG x 1	18.5 mm
WB-SC-AC1.0-48AS	EVE	8 AWG x 2	10 AWG x 1	16 AWG x 1	20.5 mm

Alternate Electric Vehicle Cable - Same as above except for manufacturer, CHANGZHOU PAINUO ELECTRON CO LTD (E498724).

Alternate Electric Vehicle Cable - Same as above except for manufacturer, Hongqi Cable Electrical Instrument Group Co Ltd (E520187).

24. Screws – All screws are made of Stainless Steel.

25. Metal Plate – Stainless steel. Type SUS304. One Provided. Secured to housing by one ST1.9*6 screw. Type SUS304. Used to fix micro switch. See Fig. 7 for detailed location. See ILL. 41 for overall dimensions and ILL. 42 for screw dimensions.

CONNECTOR, Cat. No. WB-SC-AC1.1-48AS - FIGs. 1 thru 5, 7 thru 9, ILL. 1

General – Cat. No. WB-SC-AC1.1-48AS is identical with model WB-SC-AC1.0-48AS except for below items.

1. Terminals – Ultrasonic welding type only for power contacts, crimp type for PE/CP/CS contact. Silver and nickel plated copper alloy for Power and PE contacts, silver plated copper alloy for signal contacts. See table below for details.

Cat. No.	Contact Terminals	Number of Terminal	Wire Size	ILL. No.
WB-SC-AC1.1-48AS	Power	2	8 AWG	13A
	PE	1	10 AWG + 22 AWG	15
	Signal(CP)	1	22 AWG	19
	Signal(CS)	1	22 AWG	19

2. Electric Vehicle Cable – R/C (FFSO2/8), HOTRON PRECISION ELECTRONIC IND (SUZHOU) CO LTD (E516181), type EVH2001, rated 600 V, 105°C. See ILLs. 39A and 24A for cable spec and wire connection.

Model	Type	Power Conductor	Ground Conductor	Signal Conductor	Nominal Cable Diameter
WB-SC-AC1.1-48AS	EVH2001	8 AWG x 2	10 AWG x 1	22 AWG x 4	14.5 mm

3. Temperature Sensors – Type TPSNP103F3950FAL200, Mfr. by Shenzhen TOPOS Sensor Technology co,. LTD, rated -40°C - 200°C, three 22 AWG wires. Two provided, attached to power contacts, then wrapped with heat shrinkable tube.

Figure-1 Page-1

Figure-2 Page-1

Figure-3 Page-1

Figure-4 Page-1

Figure-5 Page-1

Figure-6 Page-1

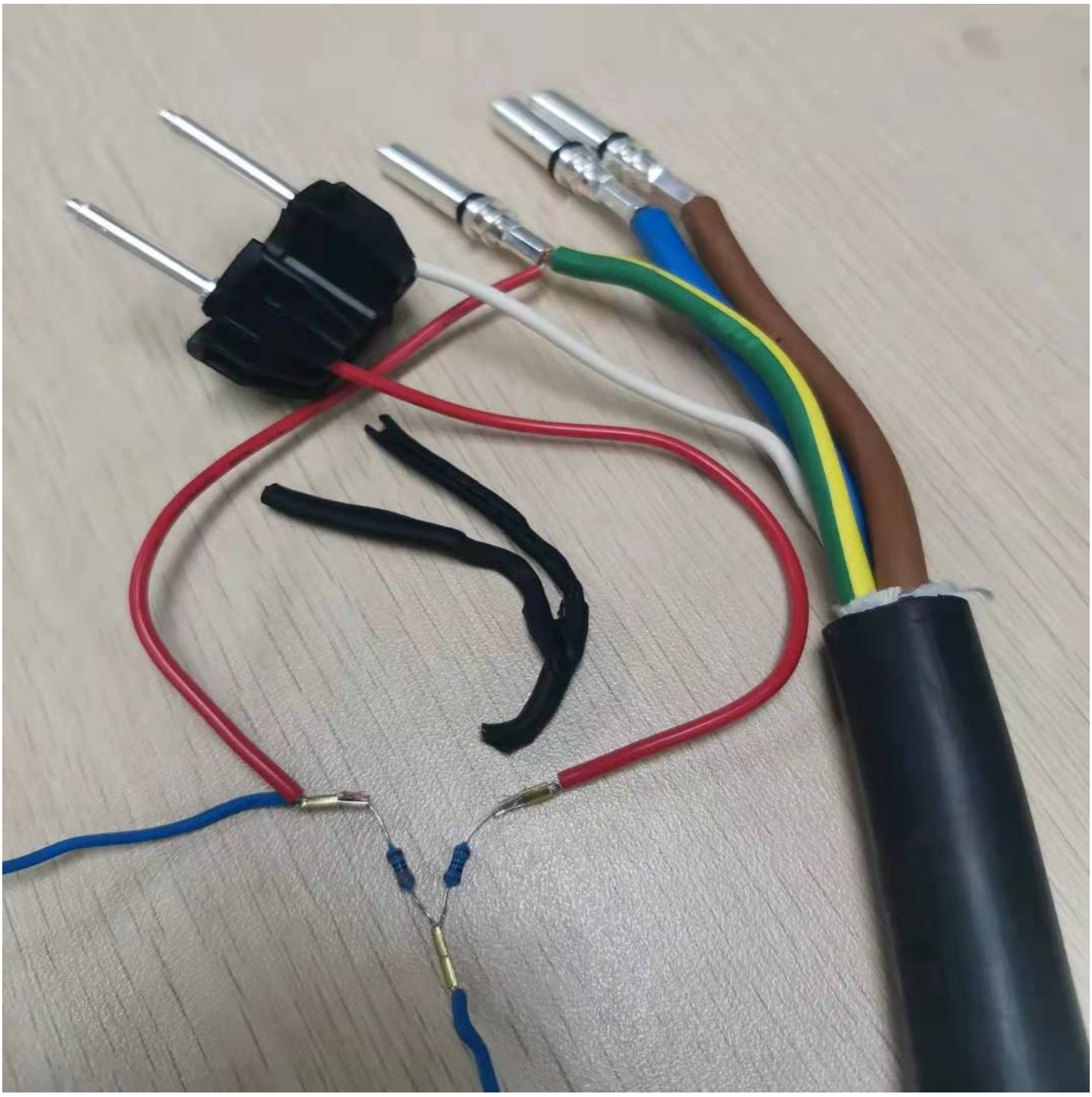

Figure-7 Page-1

Figure-8 Page-1

Figure-9 Page-1

TEST RECORD NO. 1

SAMPLES:

Samples of Vehicle Connector, Models WB-SC-AC1.0-16AS, WB-SC-AC1.0-32AS, WB-SC-AC1.0-40AS, WB-SC-AC1.0-48AS, were submitted by the manufacturer.

GENERAL:

Test results relate only to the items tested.

The following tests conducted in accordance with UL 2251 were considered representative of the same tests required by Canadian Standard, CAN/CSA C22.2 No. 282-17:

Test Item	Standard/Section	DS No.	Test Location
Accelerated Aging Test	UL 2251, Sec. 25	DS1	Zics
Mold Stress Relief Test	UL 2251, Sec. 26	DS1	Zics
Moisture Absorption Resistance	UL 2251, Sec. 27	DS1	Zics
Humidity Conditioning	UL 2251, Sec. 28	DS1	Zics
Insulation Resistance Test	UL 2251, Sec. 29	DS1	Zics
Dielectric Withstand Test	UL 2251, Sec. 30	DS1	Zics
Dew Point Test	UL 2251, Sec. 31	DS1	Zics
Conductor Secureness and Pullout Test	UL 2251, Sec. 32	DS1	Zics
Cable Secureness Test	UL 2251, Sec. 33	DS1	Zics
Impact Test (Plugs, Vehicle Connectors And Breakaway Couplings)	UL 2251, Sec. 34	DS1	Zics
Crush Test	UL 2251, Sec. 35	DS1	Zics
Vehicle Driveover Test	UL 2251, Sec. 36	DS4	UL
Withdrawal Force Test	UL 2251, Sec. 37	DS1	Zics
Grounding Path Current Test	UL 2251, Sec. 38	DS1	Zics
Short Circuit Test	UL 2251, Sec. 39	DS3	Zhongjian
No Load Endurance Test	UL 2251, Sec. 41	DS1	Zics
Overload Test	UL 2251, Sec. 43	DS1	Zics
Electromagnetic Test (Pilot Contacts)	UL 2251, Sec. 44	DS1	Zics
Temperature Rise And Surface Temperature Test	UL 2251, Sec. 45 and 47	DS1	Zics
Polarization Integrity Test	UL 2251, Sec. 49	DS1	Zics
Accelerated Aging Gasket Tests - E360537, SIR, CHN-6(Y)00@(f1)	UL 2251, Sec. 52	DS1	Zics

(Cont'd):

Test Item	Standard/Section	DS No.	Test Location
Enclosure Tests for Environmental Protection (Type 3R) - Rain Test	UL 2251, Sec. 54 UL 50E, Sec. 8.3	DS2	Zics
Enclosure Tests for Environmental Protection (Type 3R) - External Icing Test	UL 2251, Sec. 54 UL 50E, Sec. 8.5	DS2	Zics

Unless otherwise noted, all tests were conducted with the sample connected to a 240 Vac, 60 Hz source of supply.

Zics – ZENITH INTERNATIONAL COMPLIANCES SERVICES CO LTD, addressed BLDG 14. 25 XIANXING RD XIANLIN INDUSTRY ZONE XIANLIN TOWN. YUHANG DISTRICT HANGZHOU 311122 ZHEJIANG China.

Zhongjian - Zhongjian Quality Test and Certification Research Institute Co LTD, addressed No.352, Banshan Road, Hangzhou, 310022, Zhejiang, China.

UL - UL Changzhou Quality Technology Services Co., Ltd., 21 Longmen Rd National High Tech Industrial Development District, Wujin, Changzhou, Jiangsu, 213100.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 2251	Plugs, Receptacles, and Couplers for Electric Vehicles	Fourth Edition	November 20, 2017
CSA C22.2 No. 282-17	Plugs, Receptacles, and Couplers for Electric Vehicles	Second Edition	November 20, 2017

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

TEST RECORD NO. 2

SAMPLES:

A Request was submitted by the applicant to add one alternate Micro Switch to EV connector models WB-SC-AC1.0-16AS, WB-SC-AC1.0-32AS, WB-SC-AC1.0-40AS, WB-SC-AC1.0-48AS.

Alternate Micro Switch - R/C(WOYR2/8), ZING EAR ENTERPRISE CO LTD (E89885), Model G303, rated 12 Vdc, 3 A, 85 ˚C.

GENERAL:

No tests were considered necessary due to the similarity to previous tested construction except for micro switch.

The following tests were considered covered:

Test	File Reference	Report Date	Test Record No.
All	E520412	2021-08-13	1

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 2251	Plugs, Receptacles, and Couplers for Electric Vehicles	Fourth Edition	November 20, 2017
CSA C22.2 No. 282-17	Plugs, Receptacles, and Couplers for Electric Vehicles	Second Edition	November 20, 2017

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Report by:

Emilie Zheng
Project Engineer

Reviewed by:

Tsutomu Takahashi
Engineering Leader

TEST RECORD NO. 3

SAMPLES:

A Request was submitted by the applicant to add alternate EV Cable (FFSO/7. E520187) to models WB-SC-AC1.0-16AS, WB-SC-AC1.0-32AS, WB-SC-AC1.0-40AS, WB-SC-AC1.0-48AS. The alternate cable is identical to previously evaluated cable except for manufacturer.

GENERAL:

No tests were deemed necessary due to similarity to previously tested construction.

The following Tests were considered covered:

Test	File Reference	Report Date	Test Record No.
All	E520412	2021-08-13	1

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 2251	Plugs, Receptacles, and Couplers for Electric Vehicles	Fourth Edition	November 20, 2017
CSA C22.2 No. 282-17	Plugs, Receptacles, and Couplers for Electric Vehicles	Second Edition	November 20, 2017

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Report by:

Emilie Zheng
Project Engineer

Reviewed by:

Tsutomu Takahashi
Engineering Leader

TEST RECORD NO. 4

SAMPLES:

A Request was submitted by the applicant to 1) add alternate housing construction for micro switch , 2) add a metal plate to fix micro switch to models WB-SC-AC1.0-16AS, WB-SC-AC1.0-32AS, WB-SC-AC1.0-40AS, WB-SC-AC1.0-48AS.

GENERAL:

No tests were considered necessary due to similarity to previously tested construction.

The following Tests were considered covered:

Test	File Reference	Report Date	Test Record No.
All	E520412	2021-08-13	1

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 2251	Plugs, Receptacles, and Couplers for Electric Vehicles	Fourth Edition	November 20, 2017
CSA C22.2 No. 282-17	Plugs, Receptacles, and Couplers for Electric Vehicles	Second Edition	April, 2018

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Report by:

Jim Xia
Engineer Project Associate
Crystal Yang
Project Engineer

Reviewed by:

Emilie Zheng
Project Engineer

TEST RECORD NO. 5

SAMPLES:

Samples of Vehicle Connectors were submitted by the applicant to 1) add alternate ultrasonic welding type Power Contact Terminals to models WB-SC-AC1.0-16AS, WB-SC-AC1.0-32AS, WB-SC-AC1.0-40AS and WB-SC-AC1.0-48AS. 2) add new model WB-SC-AC1.1-48AS.

The model WB-SC-AC1.1-48AS is identical to model WB-SC-AC1.0-48AS, except for EV Cable, temperature sensor and Power Contact Terminals (ultrasonic welding type only).

Electric Vehicle Cable - R/C (FFSO2/8), HOTRON PRECISION ELECTRONIC IND (SUZHOU) CO LTD (E516181), type EVH2001, rated 600 V, 105°C.

GENERAL:

Test results relate only to the items tested.

Only the following tests were considered necessary due to the similarity to previous tested construction.

The following tests conducted in accordance with UL 2251 were considered representative of the same tests required by Canadian Standard, CAN/CSA C22.2 No. 282-17:

Test Item	Standard/Section	DS No.	Test Location
Conductor Secureness and Pullout Test	UL 2251, Sec. 32	DS1	UL-SUZ
Cable Secureness Test	UL 2251, Sec. 33	DS1	UL-SUZ
Withdrawal Force Test	UL 2251, Sec. 37	DS1	UL-SUZ
Short Circuit Test	UL 2251, Sec. 39	DS2	UL-NBK
No Load Endurance Test	UL 2251, Sec. 41	DS1	UL-SUZ
Overload Test	UL 2251, Sec. 43	DS1	UL-SUZ
Temperature Rise And Surface Temperature Test	UL 2251, Sec. 45 and 47	DS1	UL-SUZ

Unless otherwise noted, all tests were conducted with the sample connected to a 240 Vac, 60 Hz source of supply.

UL-SUZ - UL-CCIC COMPANY LIMITED, addressed No.2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, China.

UL-NBK - UL LLC, addressed 333 Pfingsten Rd., Northbrook, IL 60062-2096, America.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 2251	Plugs, Receptacles, and Couplers for Electric Vehicles	Fourth Edition	November 20, 2017
CSA C22.2 No. 282-17	Plugs, Receptacles, and Couplers for Electric Vehicles	Second Edition	April, 2018

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Report by:

Jim Xia(T)
Engineer Project Associate
Crystal Yang
Project Engineer

Reviewed by:

Emilie Zheng
Project Engineer

CONCLUSION

Samples of the components covered by this Report have been found to comply with the requirements covering the category and the components are found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the sample(s) investigated by UL and does not signify the product(s) described as being covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the Recognized Marking on such products which comply with UL's Follow-Up Service Procedure and any other applicable requirements of UL LLC. The Recognized Component Mark of UL LLC on the product, or the Recognized Marking symbol on the product and the Recognized Component Mark on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Recognition and Follow-Up Service.

Report by:

Emilie Zheng
Project Engineer

Reviewed by:

Tsutomu Takahashi
Engineering Leader