

APPLICATION FOR TEST REPORT

On Behalf of

Prepared For : Zhongshan Abbeo Electrical Appliance Technology Co., Ltd
No.36 Renhe Road East, Dongfeng Town Zhongshan City
Guangdong Province

Product Name : Car charger

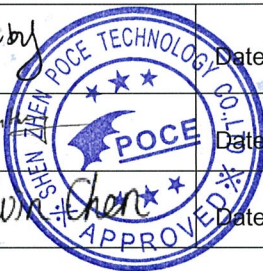
Model(s) : KLK1, KLK2, KLK3, KLK4, KLK5, KLK6, KLK7, KLK8, KLK9, KLK10

Prepared By : Shenzhen POCE Technology Co., Ltd.
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Test Date : Dec. 08, 2022 to Dec. 27, 2022

Date of Report : Dec. 27, 2022

Report No. : POCE221221442FRS

UL 2089	
Job No.....:	POCE221221442FRS
Applicant	Zhongshan Abbeo Electrical Appliance Technology Co., Ltd
Address	No.36 Renhe Road East, Dongfeng Town Zhongshan City Guangdong Province
Standard.....:	UL 2089, 3rd Ed., Dated Nov. 22, 2011, Rep. Sep. 30, 2015
Test Procedure	Test report
Tested By	 Date: Dec. 27, 2022
Checked By	 Date: Dec. 27, 2022
Reviewed By	 Date: Dec. 27, 2022
Type of Test Object.....:	☒ prototype ☐ product
Test location.....:	Shenzhen POCE Technology Co., Ltd. 102 Building H1 & 1/F, Building H, Hongfa Science & Technology Park, Tangtou, Shiyao, Bao'an District, Shenzhen, Guangdong, China
Product name.....:	Car Charger
Trade Mark.....:	N/A
Manufacturer.....:	Zhongshan Abbeo Electrical Appliance Technology Co., Ltd
Address	No.36 Renhe Road East, Dongfeng Town Zhongshan City Guangdong Province
Model/type Reference	KLK1, KLK2, KLK3, KLK4, KLK5, KLK6, KLK7, KLK8, KLK9, KLK10
Rating.....:	Input: DC12.0-24.0V Output: DC12.0-24.0V
Mass Of Equipment (kg).....:	0.031

General remark:

1. This data sheet is applicable for standard: UL 2089, 3rd Ed., Dated Nov. 22, 2011 and UL746C, 6th edition, revision Oct.-28-2010, CSA TIL I-35: Jan 8, 1997
2. When a test instrument has multiple manually selectable ranges, specify the range used
3. Please refer to calibration record for Equipment Calibration Date.
4. Total data sheet pages: 19
total appendix pages: /
5. The test method shall be referred to the above standard(s).

Additional remark:

The all models are same except their model number, and all tests are based on KLK1.

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Sub-Clause	Test	Result
UL2089		
21	General	P
22	Maximum Output voltage	P
23	Power input	P
24	Temperature	P
25	Dielectric Voltage Withstand	P
26.5	Abnormal Temperature Test	P
28A	Push-Back Relief Test	P
27	Resistance to Crushing	P
TIL I-35		
2.4.2 (a)	Rating	P
2.4.2 (b)	Temperature	P
2.4.2 (d)	Abnormal operation	P
2.4.2 (f)	Resistance to Impact	P
UL 746C	Tests for Thermoplastic Enclosures:	
29	Mold Stress Relief Distortion	P

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UL2089, cl 21 General

21.1 The number of representative samples indicated in Table 21.1 shall be subjected to the tests described in Sections 22– 28. Unless otherwise specified, all tests are to be conducted at the marked d-c voltage. The test supply of rated voltage shall have a minimum capacity of 30 A.

21.2 With respect to 21.1 and footnotes a and b of Table 21.1, a sample may be used for more than one test, provided that the previous test did not damage the sample.

21.3 The cheesecloth mentioned in this standard is to be bleached cheesecloth running 14 – 15 yd²/lb (approximately 26 – 28 m²/kg) and having what is known in the trade as a count of 32 by 28, that is, for any square inch, 32 threads in one direction and 28 threads in the other direction (for any square centimeter, 13 threads in one direction and 11 in the other direction).

21.4 The tests described in Sections 22 – 28 are to be conducted in an ambient air temperature within the range of 21 – 30°C (70 – 86°F).

Exception: The normal temperature test described in Section 24 with or without standard fuses, but without the other forms of overcurrent or overtemperature protectors may be conducted in an ambient air temperature within the range of 10 – 40°C (50– 104°F).

21.5 For tests which specify rated load conditions, a sample is to be connected to the load specified in Table 21.2.

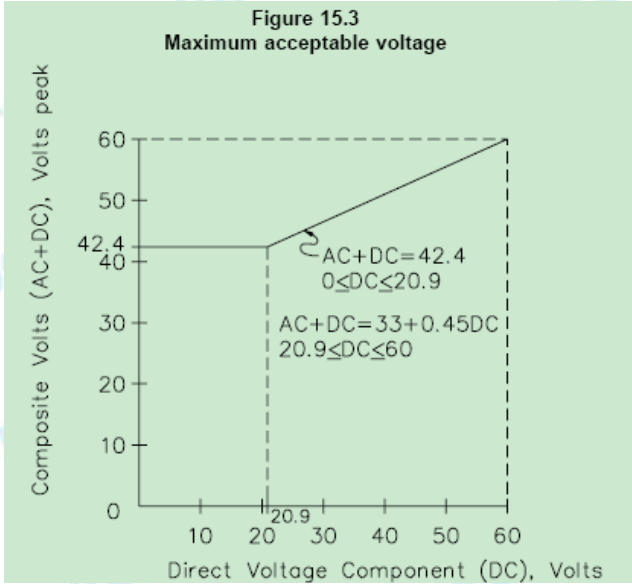
Table 21.2
Unit output loading

Intended use	Load for test
Other than battery charger	Variable resistor adjusted to result in rated output current.
Battery charger	Variable resistor in parallel with a 10,000 μ F capacitor adjusted to result in rated output current; or, for the temperature test, a load as noted in 23.3, 23.4 or 23.5 if a battery charger is intended for use with specific batteries.

21.6 With reference to Table 21.2, if an output is rated in watts or volt-amperes, the rated output current is considered to be the quotient of the watt or volt-ampere rating and the voltage rating.

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UL2089, cl 22. Maximum output voltage test

Measurement		P
Condition:	Measured Voltage	Limit
Connector using the 12Vdc, with any loading, include no loading.	12V supplied: Output: <u>12.06V</u>	$\leq 42,4 \text{ Vpeak a.c., or}$ $\leq 60 \text{ Vdc, or}$ $\leq 24,8 \text{ Vpeak d.c., @ 200 Hz, < 50\% duty cycle, or}$ In the range of below table for AC+DC
Figure 15.3 Maximum acceptable voltage 		
DC source (POCE-SY-037), oscilloscope (POCE-SY-030), Electronic Loading(POCE-SY-015)		

UL2089, cl 23 Power input test/ TIL I-35, cl 2.4.2 (a) rating

The current or watts input to a vehicle battery adapter, shall not be more than 110 percent of the rated value.

TABLE: Electrical data						P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
12	5	--	60.0	Fuse	--	Output; load DC12V/5A Max.
DC source (POCE-SY-037), Electronic Loading(POCE-SY-015)						

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UL2089, cl 24. Temperature test (including 26,5 Abnormal temperature test)/

TIL I-35, cl 2.4.2 (b) Temperature

25/ 27.5	Thermal requirements				P
Supply voltage (V): Normal: Input: 12 Vdc. Abnormal: Normal temperature rise under 12V voltage was tested, then the input voltage was adjusted to 10.5Vdc, and then to temperature stability, then to 14.5Vdc, and then to temperature stability, test three times		normal	—	abnormal	—
Maximum measured temperature T of part/at.:		dT (°C)	Allowed dT (°C) Normal	dT (°C)	Allowed dT (°C) Abnormal
1	Metal part	48.9	55	44.2	55+20
2	Enclosure outside	58.2	75	53.2	75+20
3	Ambient	25.0	--	25.0	--
DC source (POCE-SY-037), Electronic Loading(POCE-SY-015), Temperature Recorder (POCE-SY-012-1)					

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UL2089, cl 25 Dielectric Voltage-Withstand Test

While still in a heated condition, a unit shall withstand for 1 min without breakdown the application of a 60-Hz essentially sinusoidal potential of:

- 500 V between a circuit operating at 60 V dc or less or 50 V ac rms (70 V peak) or less and dead metal parts; and
- 1000 V plus twice the maximum circuit voltage between a circuit operating at more than 60 V dc or more than 50 V ac rms (70 V peak) and dead metal parts.

25 Electric strength		P
Test voltage applied between:	Test voltage (V)	Breakdown
Input and plastic enclosure	500	Yes/ No
Withstanding Voltage Tester (POCE-SY-001), Stop watch (POCE-SY-010)		

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UL2089, cl 26 Abnormal tests/ TIL I-35, cl 2.4.2 (d) Abnormal operation

26.1.1 A unit shall not emit flame or molten metal or become a risk of fire or electric shock when subjected to the reverse polarity, component breakdown and battery-supply cord short circuit tests. 26.1.2 A risk of fire or electric shock is considered to exist if any of the following occurs:

- a) Charring of cheesecloth;
- b) Emission of flame or molten material from the unit enclosure and output cord, if provided; or,
- c) Any condition that exposes live parts which present a risk of electric shock as specified in Section 15.

26.1.3 Each test is to be conducted on a separate sample unless the manufacturer requests that more than one test be conducted on the same sample.

26.1.4 A polarity-protection circuit provided to prevent output-current flow until a battery is connected as intended to the output is to be made inoperative so that the required output current will flow.

26.1.5 During all abnormal tests the unit is to be draped with a double layer of cheesecloth conforming to the outline of the unit.

Rated Input, V dc	Measured Input, V dc	Component Fault Condition	Measured Output Voltage, V peak	Observations	Duration, h
12	12.0	SC of output	0	Unit shutdown immediately, recoverable, no hazards.	10mins
DC source (POCE-SY-037), Electronic Loading(POCE-SY-015), (POCE-SY-001), Stop watch (POCE-SY-010)				Withstanding Voltage Tester	

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UL2089, cl 27 Resistance to Crushing Test

27.1 One sample of the cigarette lighter connector shall withstand for 1 min a steady crushing force of 75 lbf (334 N). The cigarette lighter connector is to be tested between two parallel, flat, maple blocks, each not less than 1/2 in (12.7 mm) thick. The crushing force is to be applied gradually in a direction normal to the mounting surface.

Result: Withstand / ~~Damaged~~

Equipments:

UL2089, cl 28 Strain Relief Test/ TIL I-35, cl 2.4.2 (g) Strain Relief

28.1 The strain relief means provided between the battery-supply cord and cigarette lighter connector shall withstand for 1 min without displacement a direct pull of 20 lbf (89 N) applied to the cord, with the connections within the cigarette lighter connector disconnected. The strain relief is not acceptable if, at the point of disconnection of the conductors, there is such movement of the cord as to indicate that stress on the connections would have resulted.

28.2 A 20-lb (9 kg) weight is to be suspended from the cord so that the strain relief means will be stressed from any angle the construction permits.

Result: Passed / ~~Failed~~

Equipments: POCE-SY-007, POCE-SY-010

UL2089, cl 28A Push-Back Relief Test

The cord is to be held 1 inch (25.4 mm) from the point where the cord or lead emerges from the product and is then to be pushed back into the product. When a removable bushing which extends further than 1 inch is present it is to be removed prior to the test. When the bushing is an integral part of the cord, then the test is to be carried out by holding the bushing. The cord or lead is to be pushed back into the product in 1 inch (25.4 mm) increments until the cord buckles or the force to push the cord into the product exceed 6 pounds-force (26.7 N).

1. Subjecting the cord or wiring to mechanical damage? (~~Yes~~/No)
2. Exposing the cord or wiring to a temperature higher than that for which it is rated? (~~Yes~~/No)
3. Reducing spacings below the minimum required Values? (~~Yes~~/No)
4. Damaging internal connections or components? (~~Yes~~/No)

Result: Passed / ~~Failed~~

Equipments: POCE-SY-007, POCE-SY-010

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TIL I-35, cl 2.4.2 (f) Resistance to Impact

- a) under 10-40°C ambient, enclosure shall be subjected to one impact 7 ± 0.2 J (area ≤ 25800 mm²) or 13 ± 0.4 J (area > 25800 mm²), by a steel sphere, from higher 1.3 m or 2.6 m respectively.
Three samples shall be tested.
- b) three sample shall be cooled to 0°C for 3 h, immediately, be subjected to impact test described above.

area: < ($>$ or ≤ 25800 mm²), impact energy: 7 J

After test, the samples:

- Reduce spacing below the minimum acceptable value ☒ NO (pass) ☐ YES (fail)
- Make any bare live parts or internal wiring accessible to contact ☒ NO (pass) ☐ YES (fail)
- Have an undue adverse effect on the insulation ☒ NO (pass) ☐ YES (fail)
- Produce any other condition that might increase the equipment's risk of shock, fire or casualty ☒ NO (pass) ☐ YES (fail)

Result: Passed / ~~Failed~~

Equipments: POCE-SY-017

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UL 746C, cl 29: Mold Stress-Relief Distortion Test for enclosureTest Method:

The sample of the completed equipment or the part under consideration shall be placed in a circulating air oven for 7 hours at a temperature 10 °C above the maximum attained on the enclosure during the Normal Temperature test or 70 °C, whichever is higher .

The temperature of the test was 70 °C.

Record:

Following the conditioning, there (☐was / ☒was no) softening of the material as determined by handling immediately.

There (☐was / ☒was no) reduction of spacing below those required by the standard.

There (☐was / ☒was no) exposure of live parts or internal wiring or defeating the integrity of the enclosure so that acceptable mechanical protection is not afforded to internal parts of the equipment.

There (☐was / ☒was no) conditions that causing interference with the intended operation or servicing of the equipment.

Results:

These results (☒did / ☐did not) comply with the requirements.

Equipments: POCE-SY-029, POCE-SY-010

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UL 746C, cl 31: Strain Relief Test After Mold Stress-Relief DistortionTest Method:

a) The sample of the completed equipment or the part under consideration shall be placed in a circulating air oven for 7 hours at a temperature 10 °C above the maximum attained on the enclosure during the Normal Temperature test or 70 °C, whichever is higher .

The temperature of the test was 70 °C.

After the test sample has cooled to room temperature following the oven conditioning, the strain relief test was performed.

b) A pull of 20 ~~35~~ pounds force was applied to the attached flexible cord for 1 minute. The connections of the cord inside of the appliance were disconnected.

Record:

The strain relief means provided (☐could / ☒could not) withstand the pull applied on the flexible cord.

Results:

These results (☒did / ☐did not) comply with the requirements.

Photos of product

Photo 1

view

- ☐ front
☐ back
☒ side
☐ top
☐ internal
☐ bottom



Photo 2

view

- ☐ front
☐ back
☐ side
☐ top
☒ internal
☐ bottom



---THE END---