

# UL 2089

## TEST REPORT

Client Name :

Address :

Product Name : 12-24V USB CAR charger

Test Model No. : YJ-DS2035B

Report No. : CCTI-2022081606S

Test Date : Aug. 15, 2022 to Aug. 22, 2022

Issued Date : Aug. 22, 2022

Prepared By : Shenzhen CCTI Technology Co., Ltd.

Address : 7th Floor, Block A, Building E, Yongwei Industrial Park, No. 118,  
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<h1 style="text-align: center;">TEST REPORT</h1> <h2 style="text-align: center;">UL 2089</h2> <h3 style="text-align: center;">Standard for Vehicle Battery Adapters</h3>	
Report reference No.....	CCTI-2022081606S
Date of issue .....	Aug. 22, 2022
Tested by (name + signature) .....	Kevin Hu
Approved by (name + signature) ..	Corey Mao
Total number of pages.....	26
Testing Laboratory.....	Shenzhen CCTI Technology Co., Ltd.
Address.....	7th Floor, Block A, Building E, Yongwei Industrial Park, No. 118, Yongfu Road, Qiaotou, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China.
Testing location .....	Same as above
Applicant's name .....	Dongguan Yujie Electronic Technology Co., Ltd
Address.....	Room 801, Building A, Changyou Industrial Park, No.2, Yuanshanzai Road, Xin' an, Chang' an Town, Dongguan City, Guangdong Province.
<b>Test specification</b> Standard.....: UL2089: 2011 R9.15 Standard for Vehicle Battery Adapters Test procedure ....., UL Report Non-standard test method ....., N/A This report shall not be reproduced except in full, without the written approval of Shenzhen CCTI Technology Co., Ltd. This document may be altered or revised by Shenzhen CCTI Technology Co., Ltd. personnel only, and shall be noted in the revision section of the document. The test results in the report only apply to the tested sample.	
Test item description .....	12-24V USB CAR charger
Trademark .....	N/A
Manufacturer's name .....	Dongguan Yujie Electronic Technology Co., Ltd
Address.....	Room 801, Building A, Changyou Industrial Park, No.2, Yuanshanzai Road, Xin' an, Chang' an Town, Dongguan City, Guangdong Province.
Model and/or type reference .....	YJ-DS2035B
Model difference .....	N/A
Rating(s) .....	Input: 12Vdc Output: 5V--- 3.1A, 7V--- 2.4A, 9V--- 2A, 12V--- 1.5A

List of Attachments (including a total number of pages in each attachment):

--Attachment 1: 5 pages for Photo documentation.

### Summary of testing:

#### Tests performed (name of test and test clause):

All applicable test

#### Testing location:

Shenzhen CCTI Technology Co., Ltd.  
 7th Floor, Block A, Building E, Yongwei Industrial  
 Park, No. 118, Yongfu Road, Qiaotou, Fuhai Street,  
 Bao'an District, Shenzhen, Guangdong, China

### Summary of compliance with National Differences (List of countries addressed):

N/A

☒ The product fulfils the requirements of **UL2089: 2011**

### Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

(Additional requirements for markings. See 1.7 NOTE)

<p align="center"><b>12-24V USB CAR charger</b></p> <p>Model No.: YJ-DS2035B</p> <p>Rating: Input: 12Vdc</p> <p>Output: 5V --- 3.1A, 7V --- 2.4A, 9V --- 2A, 12V --- 1.5A</p> <div style="text-align: center;">   </div> <p>Importer: XXX</p> <p>Address: YYY</p> <p>Manufacturer: Dongguan Yujie Electronic Technology Co., Ltd</p> <p>Address: Room 801, Building A, Changyou Industrial Park, No.2, Yuanshanzai Road, Xin' an, Chang' an Town, Dongguan City, Guangdong Province.</p> <p align="right"><b>Made in China</b></p>
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Remark on above marking:

- 1, The height of the letters is not less than 2mm; The height of WEEE symbols is more than 7 mm;
- 2, XXX means Importer name; YYY means Importer address.

<b>POSSIBLE TEST CASE VERDICTS:</b>	
- 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 .....	Aug. 15, 2022
Date(s) of performance of tests .....	Aug. 15, 2022 to Aug. 22, 2022
<b>GENERAL REMARKS:</b>	
<p>“(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>Determination of the test result includes consideration of measurement uncertainty from the test equipment and methods.</p> <p><b>When differences exist; they shall be identified in the General product information section.</b></p>	
Name and address of factory (ies) .....	Dongguan Yujie Electronic Technology Co., Ltd Room 801, Building A, Changyou Industrial Park, No.2, Yuanshanzai Road, Xin’ an, Chang’ an Town, Dongguan City, Guangdong Province.
<b>GENERAL PRODUCT INFORMATION:</b>	
<b>Product Description –</b> N/A	
<b>Circuit diagram:</b> N/A	

<b>UL 2089</b>			
Section	Requirement – Test	Result - Remark	Verdict
<b>1</b>	<b>Scope</b>		<b>P</b>
<b>2</b>	<b>Components</b>		<b>P</b>
2.1	Except as indicated in 2.2, a component of a product covered by this standard shall comply with the applicable requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.	Complied	P
2.2	A component is not required to comply with a specific requirement that: a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or b) Is superseded by a requirement in this standard.		P
2.3	A component shall be used in accordance with its rating established for the intended conditions of use.		P
2.4	Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.		P
<b>3</b>	<b>Units of Measurement</b>		<b>P</b>
3.1	Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.		P
<b>4</b>	<b>Undated References</b>		<b>P</b>
4.1	Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.		P
<b>5</b>	<b>Glossary</b>		<b>P</b>
<b>6</b>	<b>Mechanical Assembly</b>		<b>P</b>

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Section	Requirement – Test	Result - Remark	Verdict
6.1	A unit shall be formed and assembled so that it has the strength and rigidity necessary to resist the abuses to which it is likely to be subjected, without resulting in a risk of fire, electric shock, or injury to persons due to total or partial collapse with resulting reduction of spacings, loosening or displacement of parts, or other defects.		P
6.2	A unit shall have all parts reliably secured in place.		P
6.3	An enclosure, an opening, a frame, a guard, a knob, a handle, or the like shall not be sufficiently sharp to constitute a risk of injury to persons in normal maintenance or use.	No sharp edges or points	P
6.4	A unit shall be constructed so that it will not be necessary to open or remove the enclosure when the unit is used as intended.		P
6.5	Each lampholder, switch, and similar component shall be mounted securely and shall be restrained from turning by more than friction between surfaces. For example, the use of a lock washer is an acceptable means to restrain the turning of a device having a single hole mounting means.	No such component	N/A
6.6	A replaceable lamp in a unit shall be replaceable without opening the enclosure.	No such lamp	N/A
6.7	A nonreplaceable pilot lamp, such as an indicating type overload- or short-circuit protector, a neon light, or an indicator light, is one in which the lamp is sealed-in, such as by an unremovable lens.	No indicator light used.	N/A
6.8	A switch or an overcurrent-protective device shall be located within the unit enclosure and protected in such a manner as not to be accessible or exposed to tampering nor subject to mechanical damage during normal use or as a result of abuse. This requirement does not apply to the actuating means of a switch.	No fuse used within unit	N/A
6.9	The requirements in 6.8 also apply to the actuating means – toggle, handle, or the like – if the dislodging of such part exposes live parts or film-coated magnet wire that can be contacted as specified in Accessibility of Live Parts, Section 16.		N/A



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6.10	The overall mass of the cigarette lighter connector shall not exceed 250 g (8.8 oz). The product of (the total mass) and (the distance between the center of gravity and the input contact positioned to simulate full insertion into a power outlet) shall not exceed 13500 g-mm (18.7 oz-in). For a unit with an attached cord, the determination shall be made with the cord severed at the enclosure, or at the strain-relief means if the strain-relief means is outside the enclosure. For a unit with a detachable cord, the determination shall be made with the cord severed from the mating connector connected to the cigarette lighter connector.		P

<b>7</b>	<b>Enclosure</b>		<b>P</b>
7.1	A unit shall be provided with an enclosure that shall house all current-carrying parts that present a risk of electric shock. The enclosure shall have the strength and properties necessary to reduce the risk of mechanical damage to the various parts.		P
7.2	A unit shall have no openings larger than those complying with Section 16, Accessibility of Live Parts.		P
7.3	If an acceptable grade of vulcanized fiber is used as part of the enclosure for the support of parts (terminals and the like) that do not present a risk of fire or electric shock, the amount of fiber shall not be more than is necessary to support the parts in question. The fiber shall not be less than 1/32 in (0.8 mm) thick and shall not introduce a risk of fire, electric shock, or injury to persons as a result of abuse.	No such fiber used	N/A
7.4	An enclosure constructed of sheet metal shall be formed from stock having a thickness not less than that specified in Table 7.1. The thickness of enclosure sheet metal other than steel or aluminum shall not be less than that specified in Table 7.1 for uncoated steel and shall have the necessary strength and rigidity.	No such sheet metal used on enclosure	N/A
7.5	In addition to the performance tests specified in this Standard, the material of a polymeric enclosure shall have a minimum flammability classification of V-0, V-1, or V-2 and shall provide the level of performance specified in Table 7.2 for the corresponding electrical properties.	UL approval plastic V-0	P

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Section	Requirement – Test	Result - Remark	Verdict
7.6	A conductive coating applied to a nonmetallic surface such as the inside surface of a cover, enclosure, and the like shall comply with the applicable requirements in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C, unless it can be determined that flaking or peeling of the coating does not result in a reduction of spacings or the bridging of live parts that may result in a risk of fire, electric shock, or injury to persons.	Not used	N/A
7.7	An adhesive used in the assembly of the enclosure shall be investigated as specified in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.	Not used	N/A
<b>8</b>	<b>Protection Against Corrosion</b>		<b>N/A</b>
8.1	Except as noted in 8.2, iron and steel parts shall be protected against corrosion by galvanizing, plating, enameling, or other equivalent means if the corrosion of such unprotected parts would be likely to result in a risk of fire, electric shock, or injury to persons.		N/A
8.2	The requirement in 8.1 applies to all enclosing cases or to other parts upon which intended mechanical operation may depend. It does not apply to laminations and small minor parts of iron or steel, such as washers, screws, and bolts, that are not current carrying, if the corrosion of such unprotected parts would not be likely to result in a risk of fire, electric shock, or injury to persons, or result in the device not operating as intended. A part made of stainless steel does not require additional protection against corrosion.		N/A
<b>9</b>	<b>Switches</b>		<b>P</b>
9.1	The requirements in 9.2 and 9.3 apply to switches not in a Class 2 circuit, and to switches in a Class 2 circuit the breakdown of which electrically or mechanically is likely to result in a risk of fire or electric shock.		N/A
9.2	A switch subjected to a temperature higher than 50°C (122°F) shall be investigated with respect to the temperature limits of the materials used.		N/A
9.3	A switch or other control device shall be acceptable for the application and shall have current and voltage ratings not less than those of the load that it controls.		P
<b>10</b>	<b>Protective Devices</b>		<b>P</b>



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Section	Requirement – Test	Result - Remark	Verdict
10.1	A protective device built into a unit shall comply with the requirements for that device.		P
10.2	Crossed or nicked (reduced) cross-section conductors shall not be employed as a protective device.	No such parts	N/A
10.3	Protective devices as mentioned in 10.1 include, but are not limited to, eutectic material, fuses, over temperature and overcurrent protectors, thermal protectors, and similar devices intended to interrupt or limit the flow of current as a result of overload.		P
10.4	A manually reset thermostat shall be so constructed that automatic tripping of the thermostat is not precluded by any setting or position of the reset mechanism.	No such component	N/A
10.5	An automatically or manually reset protective device or replaceable overcurrent-protective device shall not open when the unit is delivering its rated output. See Temperature Test, Section 25.	No such component	N/A
10.6	A fuse or protective device shall be located in or adjacent to the cigarette lighter connector in the positive side of the supply.		P
10.7	The fuse or protective device required by 10.6 shall have a current rating not greater than the ampacity of the interconnecting cord as specified in Table 13.1, and in no case greater than 20 A.	3A current fuse used.	N/A
10.8	If the fuse or protective device is not located within the cigarette lighter connector, the length of wire between the connecting means and the protective device shall not be greater than 5 in (127 mm).	Measured not greater 5 inches	P
10.9	A protective device shall be acceptable for the application and shall have voltage and current ratings not less than those of the circuit in which it is connected.	Fuse rating: 3A	P

11	Components		P
11.1	<p>A component (such as a fixed resistor, PTC or NTC resistor, diode, or the like) used to limit the output of a unit to within the required current or power levels, or otherwise used to obtain acceptable performance, shall have permanence and stability so as not to decrease its limiting capacities. Among the factors considered when determining the acceptability of a limiting component are:</p> <p>a) Effect of operating temperature;</p> <p>b) Electrical stress level; and</p> <p>c) Resistance to moisture.</p>		P

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Section	Requirement – Test	Result - Remark	Verdict

<b>12</b>	<b>Coil Insulation</b>		<b>P</b>
12.1	Coil insulation, unless inherently moisture resistant shall be treated to render it moisture resistant.		P
12.2	Film-coated magnet wire is considered moisture resistant.		P

<b>13</b>	<b>Flexible Cords</b>		<b>N/A</b>
13.1	A unit shall be provided with a flexible cord and shall be type SP-2, SPE-2, SPT-2, SV, SVE, SVT, S, SE, SO, SP-3, SPT-3, ST, STO, SJ, SJE, SJO, SJT, or SJTO. The length of cord external to the unit and including the cigarette lighter connector shall not be less than 3 ft (0.9m) as measured from the end of the cigarette lighter connector to the point of attachment or entry. Cord AWG size shall be in accordance with Table 13.1.		N/A

<b>14</b>	<b>Input Contacts</b>		<b>P</b>
14.1	The diameter of the center (positive) contact shall not be less than 9/64 in (3.57mm).	Measured: 4.95mm min; Limit: 3.57mm minimum	P

<b>15</b>	<b>Output Connections</b>		<b>P</b>
15.1	General		P
15.1.1	A unit shall be provided with an output cord for each output, attached or detachable, which: <ul style="list-style-type: none"> <li>Terminates in a connector for connection to a low voltage appliance; or</li> <li>Is permanently attached to an intermediate enclosure for filtering or regulating circuitry. The intermediate enclosure shall be provided with means for connection of the output consisting of a cord, insulated leads, output connectors, or battery receptacle.</li> </ul>		P
15.2	Low voltage limited energy circuits		P

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Section	Requirement – Test	Result - Remark	Verdict
15.2.1	<p>A low-voltage limited-energy (LVLE) circuit is defined as a circuit with an open-circuit potential of not more than 42.4V peak ac, or 60V dc, with the energy available to the circuit limited:</p> <p>a) So that the current under any condition of load including short circuit is not more than 8A for potentials up to 42.4V peak, and 150/Vmax for potentials from 30 to 60V dc, measured after 1 minute of operation by:</p> <p>A. An isolating transformer; or</p> <p>B. A fixed impedance or reliable regulating network; or</p> <p>b) By a fuse or nonadjustable manually reset circuit protective device that is rated or set at not more than the value specified in Table 15.1.</p>		P
15.3	Output connectors		P
15.3.1	Output connectors mounted on the enclosure and intended for direct connection of accessories, such as separable battery holders and the like, shall provide a secure connection between mating parts. The connections shall be polarized if the output is direct-current or if multiple outputs are provided.		P
15.3.2	A fitting having female contacts shall be constructed so that it does not receive the blades of a standard attachment plug. A fitting having male contacts shall be constructed so that the contacts will not touch a live part of a standard attachment-plug receptacle.		P
15.4	Bushings		P
15.4.1	At a point where a flexible cord passes or is intended to pass through an opening in a metal wall, barrier, or enclosing case, there shall be a bushing or the equivalent that shall:		P
	<p>[1] Be secured in place; and</p> <p>[2] Have a smooth, rounded surface against which the cord may bear.</p>		
15.4.2	If the cord hole is in a non-conducting material, a smooth, rounded surface is considered to be the equivalent of a bushing.	Not used	N/A

<b>16</b>	<b>Accessibility of Live Parts</b>	All parts do not include hazard voltage	<b>N/A</b>
16.1	General		N/A
16.1.1	A live part that presents a risk of electric shock shall be located or enclosed so that protection against contact is provided.		N/A

UL 2089			
Section	Requirement – Test	Result - Remark	Verdict
16.1.2	The input impedance of the voltmeter used to measure voltage in accordance with 16.2.1 and 16.3.1 is to be a minimum of 1 M $\Omega$ . The input impedance of a meter with more than 1 M $\Omega$ input impedance can be lowered by using shunt impedance.		N/A
16.1.3	A guard, baffle, or cover that can be removed without using a tool is to be removed when determining if a live part is accessible to the user. A live part that can be contacted by the test pin, articulate probe, or accessibility probe illustrated in Figure 16.1, Figure 16.2, or Figure 16.4, is considered to be accessible.		N/A
16.2	Live parts other than exposed wiring terminals		N/A
16.2.1	The test pin and articulate probe illustrated in Figures 16.1 and 16.2, respectively, when applied as described in 16.2.3, shall not contact any live part with a voltage greater than that specified in 16.2.2 with respect to the vehicle chassis or any other live part simultaneously accessible, in a different location, to the test pin or articulate probe.		N/A
16.2.2	The maximum voltages which may be accessible in accordance with 16.2.1 are: a) 42.4V <sub>peak</sub> for sinusoidal or nonsinusoidal ac; b) 60V for continuous dc; c) 24.8V <sub>peak</sub> for dc interrupted at a rate of 200Hz or less with approximately 50% duty cycle; and d) As indicated in Figure 16.3 for combinations of ac and dc.		N/A
	Exception: The voltage limits specified may be exceeded if the current through a 1500 $\Omega$ resistor connected between the accessible points does not exceed 0.5mA.		N/A
16.2.3	The test pin and articulate probe referenced in 16.2.1 are to be applied with a force not exceeding 1 lbf (4.4N) to determine whether the live parts are accessible. The test pin shall not be applied to fuseholders and the like.		N/A
16.3	Exposed wiring terminals		N/A
16.3.1	The accessibility probe illustrated in Figure 16.4, when applied as described in 16.3.3 shall not contact an exposed wiring terminal with a voltage greater than that specified in 16.3.2 with respect to the vehicle chassis or to any other terminal simultaneously accessible to the probe.		N/A

UL 2089			
Section	Requirement – Test	Result - Remark	Verdict
16.3.2	The maximum voltages which may be accessible in accordance with 16.3.1 are: a) 42.4V <sub>peak</sub> for sinusoidal or nonsinusoidal ac; b) 42.4V for continuous dc; c) 24.8V <sub>peak</sub> for dc interrupted at a rate of 200Hz or less with approximately 50% duty cycle; and d) 42.4V <sub>peak</sub> for combinations of ac and dc.		N/A
16.3.3	The accessibility probe referenced in 16.3.1 is to be applied with a force not exceeding 5.62 lbf (25 N) to determine whether the exposed wiring terminals are accessible.		N/A

<b>17</b>	<b>Live Parts</b>	All parts do not include hazard voltage	<b>N/A</b>
17.1	A current-carrying part shall be silver, copper, a copper alloy, plated iron or steel, stainless steel, or other corrosion-resistant alloys acceptable for the application.		N/A
17.2	An uninsulated live part shall be secured to the base or mounting surface so that it does not turn or shift in position if such motion may result in a reduction of spacings below the minimum acceptable values.		N/A
17.3	Friction between surfaces is not acceptable as a means to prevent shifting or turning of a live part, but a lock washer is acceptable.		N/A

<b>18</b>	<b>Strain Relief</b>		<b>N/A</b>
18.1	Strain relief shall be provided between the cigarette lighter connector and its adjacent cord, and shall be tested in accordance with the Strain Relief Test, Section 29.		N/A
18.2	Means shall be provided to prevent the cord or wiring from being pushed into the enclosure through the cord-entry hole when such displacement results in: a) Subjecting the cord or wiring to mechanical damage; b) Exposing the cord or wiring to a temperature higher than that for which it is rated; c) Reducing spacings (such as to a metal strain-relief clamp) below the minimum required values; or d) Damaging internal connections or components. To determine compliance, the cord shall be tested in accordance with Section 30, Push-Back Relief Test.		N/A

<b>19</b>	<b>Internal Wiring</b>		<b>N/A</b>
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UL 2089			
Section	Requirement – Test	Result - Remark	Verdict
19.1	The internal wiring of a unit shall consist of insulated conductors having mechanical strength, dielectric properties, and ampacity for the application.		N/A
19.2	Each splice and connection shall be mechanically secure, shall provide reliable electrical contact, and shall be provided with insulation at least equivalent to that of the wire involved unless acceptable permanent spacing between the splice and all other metal parts will be maintained. When determining the required minimum thickness of splice insulation, the circuit voltage and interaction with other circuits shall be taken into consideration.		N/A
19.3	A wire connector for making a splice in a unit shall be a type that is applied by a tool in which the applicable force of the tool making the splice is independent of the force applied by the operator of the tool.		N/A
19.4	The connection between a lead, including a flexible cord, and the transformer winding or other part of the unit shall be soldered, welded, or otherwise securely connected within the enclosure. A soldered joint shall be mechanically secure before soldering.		N/A
19.5	If a lead is rigidly held in place without the use of solder, or if it is retained in place so as not to be subjected to any motion, no additional mechanical security is required. Mechanical securement of a lead is not required if separation of the connection does not result in a risk of fire or electric shock.		N/A
19.6	Unless it is to be considered as an uninsulated live part, insulated internal wiring – including an equipment-grounding conductor – shall consist of wire of a type or types acceptable for the application with respect to: a) The temperature and voltage to which the wiring is likely to be subjected; b) Exposure to oil, grease, cleaning fluid, or other substances likely to have a deleterious effect on the insulation; and c) Other conditions of service to which it is likely to be subjected.		N/A
19.7	An insulated conductor shall be located or protected to reduce the risk of contact with any sharp edge, burr, fin, moving part, or the like, that can damage the conductor insulation.		N/A
<b>20</b>	<b>Insulating Materials</b>		<b>P</b>



UL 2089			
Section	Requirement – Test	Result - Remark	Verdict
20.1	Integral parts such as insulating washers and bushings, and bases or supports for mounting of live parts, shall be of moisture-resistant materials that will not be damaged by the temperatures and stresses to which they will be subjected under conditions of actual use.		P
20.2	An insulating material is to be investigated with respect to its acceptability for the application in accordance with the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C. Materials, such as mica, ceramic, or some molded compounds are usually acceptable for use as the sole support of live parts. If it is necessary to investigate a material to determine its acceptability, consideration is to be given to such factors as its mechanical strength, resistance to ignition sources, dielectric strength, insulation resistance, and heat-resistant properties in both the aged and unaged conditions, the degree to which it is enclosed, and any other features that could result in a risk of fire and electric shock.		P
<b>21</b>	<b>Printed Wiring Boards</b>		<b>P</b>
21.1	A printed-wiring board in a unit shall comply with the Standard for Printed-Wiring Boards, UL 796, and shall be classed V-1 or less flammable, in accordance with the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94.	UL Approval PCB material	P
<b>22</b>	<b>General</b>		<b>P</b>
<b>23</b>	<b>Maximum Output Voltage Test</b>		<b>P</b>
<b>24</b>	<b>Power Input Test</b>		<b>P</b>
<b>25</b>	<b>Temperature Test</b>		<b>P</b>
<b>26</b>	<b>Dielectric Voltage-Withstand Test</b>		<b>N/A</b>
<b>27</b>	<b>Abnormal Tests</b>		<b>P</b>
27.1	General		P
27.2	Reverse polarity test	No such components	N/A
27.3	Component breakdown test	Complied.	P
27.4	Battery-supply cord short circuit test		N/A

<b>UL 2089</b>			
Section	Requirement – Test	Result - Remark	Verdict
27.5	Abnormal temperature test	Detail refer to attached table	P
<b>28</b>	<b>Resistance to Crushing Test</b>	No cracking or splitting	<b>P</b>
<b>29</b>	<b>Strain Relief Test</b>	No cracking or splitting. After test, the sample can work	<b>P</b>
<b>30</b>	<b>Push-Back Relief Test</b>	No damage	<b>P</b>
<b>31</b>	<b>General</b>		<b>P</b>
31.1	A unit shall be legibly and permanently marked where it is readily visible with the following: a) The manufacturer's name, trade name, or trademark; b) A distinctive catalog number or the equivalent; c) The input and output ratings in voltage, frequency, and amperes, watts, or volt-amperes; and d) The date or other dating period of manufacture not exceeding any three consecutive months.	Trademark: INSIGNIA Distinctive catalog number: see page 2 for details.	P
31.2	With respect to the frequency marking mentioned in 31.1, the symbol illustrated in Figure 31.1 may be used for this marking.	Not used	N/A
31.3	Unless specifically exempt, markings required by this Standard shall be permanent. A permanent marking shall be molded, die-stamped, paint-stenciled; stamped or etched metal that is permanently secured; or indelibly stamped on a pressure-sensitive label secured by adhesive. The marking means shall comply with the Standard for Marking and Labeling Systems, UL 969. Ordinary usage, handling, storage, and the like of the unit are to be considered in determining whether a marking is permanent.		P
<b>32</b>	<b>Cautionary markings</b>		<b>P</b>
32.1	A cautionary marking shall be prefixed by the word "CAUTION," "WARNING," or "DANGER" in letters not less than 1/8 in (3.2 mm) high. The remaining letters shall not be less than 1/16 in (1.6 mm) high.	Not used	N/A

<b>UL 2089</b>			
Section	Requirement – Test	Result - Remark	Verdict
32.2	There shall be a legible and durable marking for each interchangeable fuse as described in 10.8 indicating the ampere rating and the voltage rating of the fuse to be used for replacement. The marking shall be located so that it is understood as to which fuse or fuseholder the marking applies. A single marking is acceptable for a group of fuses. The marking shall consist of the word “CAUTION” and the following or the equivalent: “For continued protection against risk of fire, replace only with same type and ratings of fuse.”	Not used	N/A
32.3	A battery charger shall be marked, where readily visible to the user when connecting batteries, with the word “CAUTION” and the following or equivalent: “Charge only ___type rechargeable batteries. Other types of batteries may burst causing personal injury and damage.”	Not used	N/A
32.4	A cautionary marking shall be permanent and shall be located on a part that cannot be removed without impairing the operation of the unit.		P
32.5	A cautionary marking to instruct the operator shall be visible and legible to the operator during the intended operation of the unit.		P
32.6	With reference to 23.3, a multi-output unit shall be marked, where readily visible after installation, with the word “WARNING” and the following or equivalent: “To reduce the risk of fire or electric shock, do not interconnect output terminations.”	Not used	N/A
<b>33</b>	<b>General</b>		<b>P</b>
<b>34</b>	<b>Assembly Instructions</b>		<b>N/A</b>
<b>35</b>	<b>Operating Instructions</b>		<b>P</b>
<b>36</b>	<b>Maintenance Instructions</b>		<b>N/A</b>
<b>37</b>	<b>Moving and Storage Instructions</b>		<b>N/A</b>

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Clause	Requirement – Test	Result – Remark	Verdict

TABLE: List of critical components					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity1)
Enclosure	Interchangeable	Interchangeable	V-0, Min thickness 1.5mm, 115°C	UL 94	UL E41613
PCB	Interchangeable	Interchangeable	V-0, 130°C	UL 94	UL
Inductor	Interchangeable	Interchangeable	50uH ,130°C	UL 2089	Tested with appliance

**Supplementary information:**
<sup>1)</sup> Provided evidence ensures the agreed level of compliance.

23	TABLE: MAXIMUM OUTPUT VOLTAGE TEST				P
	Rated, Vdc	Measured, Vdc	Rated Open Circuit, Vdc	Measured Open Circuit, V [rms]	
	12Vdc	5.11	5V $\Rightarrow$ 3.1A	USB output 1	
	12Vdc	5.12	5V $\Rightarrow$ 3.1A	USB output 2	
Max. Case output					
Supplementary information:					

24	TABLE: POWER INPUT TEST						P
U (V)	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
12	1.5	1.2	14.4	--	--	--	USB output 1 + USB output 2
Supplementary information:							

25	TABLE: Temperature test, thermocouples				P
	Test voltage (V)..... :		See Below		
	Ambient (°C)..... :		40.0°C		
Thermocouple locations		Temperature rise (K)		Max. Temperature rise (K)	
		Input: 12Vdc	—		
PCB near U1		17.3	—	130-40=90	
PCB near Q1		16.4	—	130-40=90	
Enclosure at Side Contact		16.5	—	50+25-40=35	
Enclosure at Center Contact(Input center blade)		3.3	—	115-40=75	

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Clause	Requirement – Test	Result – Remark	Verdict
EC1 body	10.5	—	105-40=65
EC2 body	19.4	—	105-40=65
Enclosure inside near L1 winding	5.3	—	115-40=75
L1 winding	29.5	—	120-40=80
L2 winding	29.6	—	120-40=80
USB port	4.7	—	30+25-40=15
Ambient	40.8	—	--
Supplementary information:			

27.3	TABLE: Component breakdown test						P
Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	Observation	
EC1	SC	12Vdc	10min	--	--	Unit shutdown immediately; recoverable. No hazards	
Q1pin2-6	SC	12Vdc	10min	--	--	Unit shutdown immediately; recoverable. No hazards	
U1pin2-5	SC	12Vdc	10min	--	--	Unit shutdown immediately; recoverable. No hazards	
L1	SC	12Vdc	10min	--	--	Unit shutdown immediately; recoverable. No hazards	
L2	SC	12Vdc	10min	--	--	Unit shutdown immediately; recoverable. No hazards	
Supplementary information:							
S-C: Short-circuited. O-L: Over load.							
All above tests were performed with output loaded with 5V/2.1A							

27.4	TABLE: Overload condition test		P
	Test voltage (V)..... :	See Below	
	Ambient (°C)..... :	40.0°C	
Thermocouple locations		Temperature (°C)	Max. Temperature (°C)
		Input voltage 24Vdc	
PCB near U1		47.3	130-40+20=110
PCB near Q1		46.4	130-40+20=110
Enclosure at Side Contact		12.6	50+25-40+20=55
Enclosure at Center Contact(Input center blade)		6.4	115-40+20=95
EC1 body		18.7	105-40+20=85
EC2 body		33.4	105-40+20=85

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Clause	Requirement – Test	Result – Remark	Verdict
Enclosure inside near L1 winding	12.5	115-40+20=95	
L1 winding	59.3	120-40+20=100	
L2 winding	58.6	120-40+20=100	
USB port	8.6	30+25-40+20=35	
Ambient	40.3	--	
Supplementary information: Test at ambient temperature 40°C			

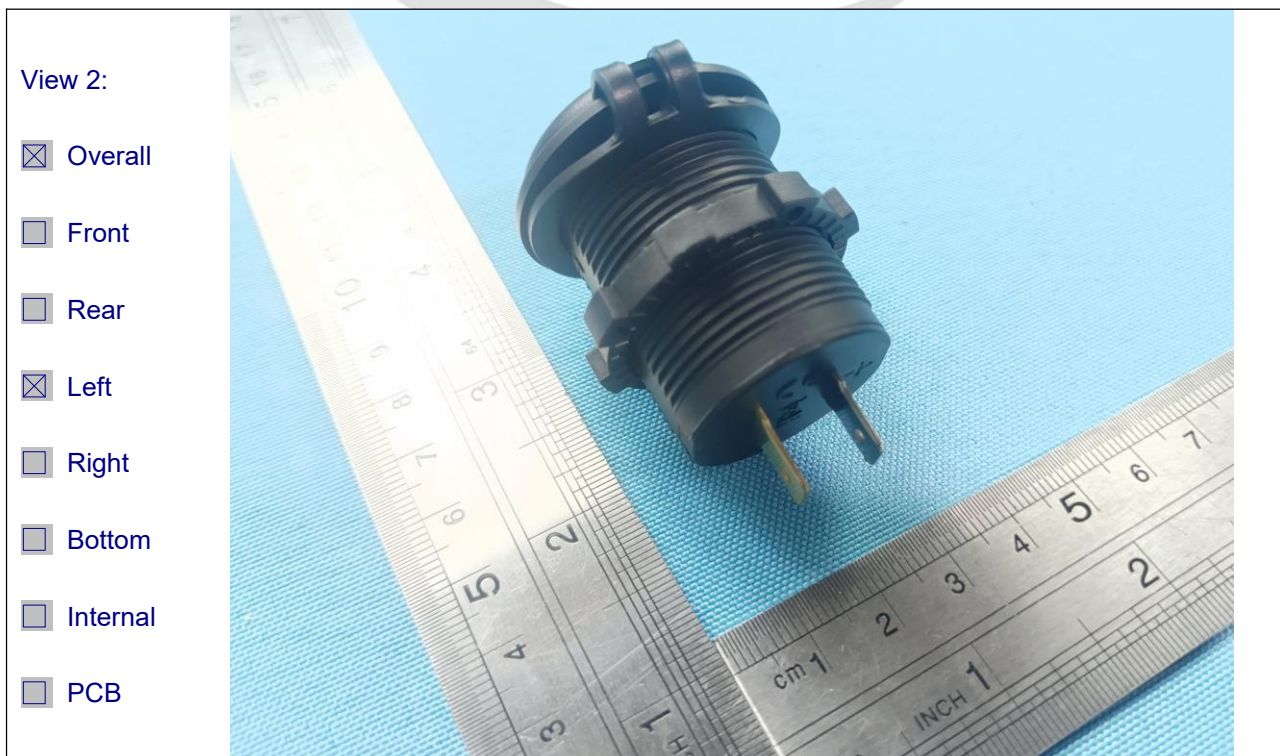
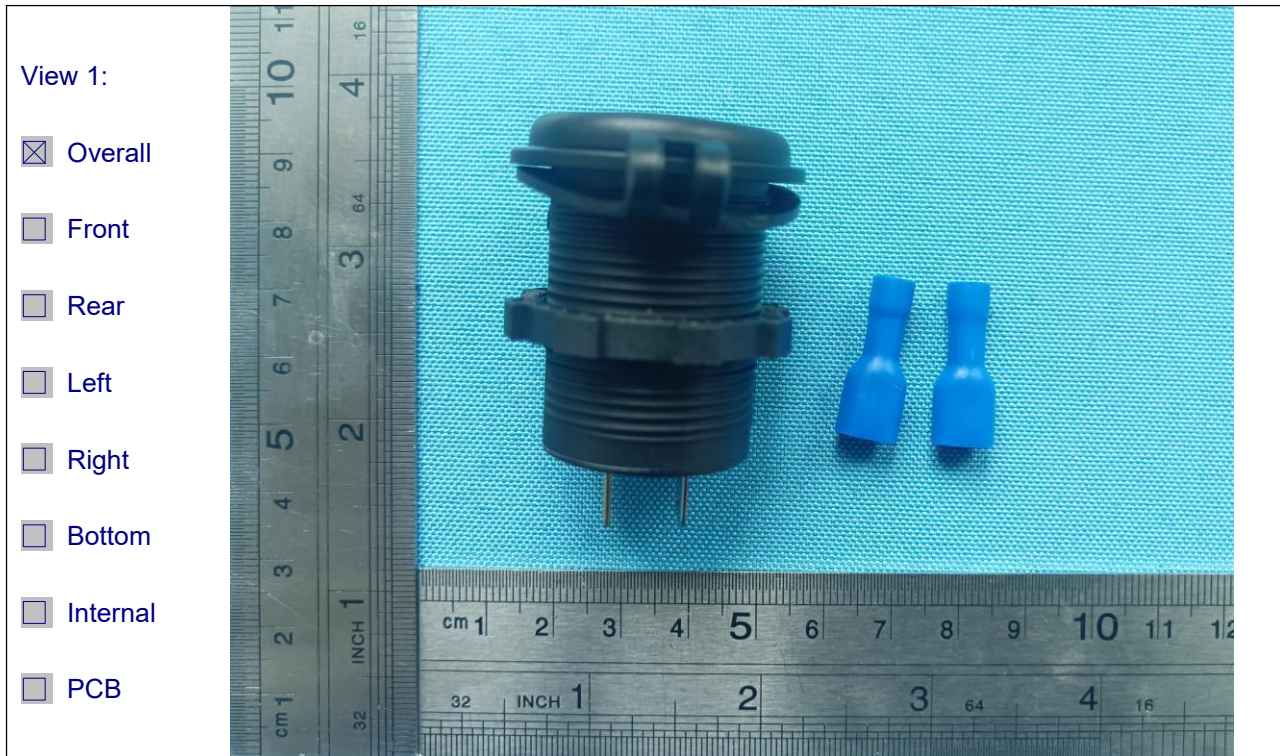
27.5	TABLE: Abnormal Temperature test					P
	Test voltage (V)..... :			See Below		
	Ambient (°C)..... :			40℃		
Thermocouple locations		Temperature (°C)				Max. Temperature ( °C)
		Input voltage DC				
		10.5V	14.5V	21.0V	29.0V	
PCB near U1		24.4	28.8	35.1	43.4	130-40+20=110
PCB near Q1		26.1	28.6	32.2	42.0	130-40+20=110
Enclosure at Side Contact		6.3	7.5	9.7	11.3	50+25-40+20=55
Enclosure at Center Contact(Input center blade)		4.5	4.4	5.1	6.0	115-40+20=95
EC1 body		10.4	11.4	14.2	17.5	105-40+20=85
EC2 body		19.7	21.2	25.4	30.3	105-40+20=85
Enclosure inside near L1 winding		6.2	7.4	9.3	11.4	115-40+20=95
L1 winding		27.4	34.5	44.3	55.4	120-40+20=100
L2 winding		26.6	34.3	43.1	54.7	120-40+20=100
USB port		5.1	5.5	6.4	7.2	30+25-40+20=35
Ambient		30.3	30.4	30.5	30.4	--
Supplementary information: According to the standard. Tests shall be performed with the input voltage between 10.5Vdc to 14.5Vdc and 21Vdc to 29Vdc. Test at ambient temperature 40℃						

61 of UL 746C	TABLE: MOLD STRESS RELIEF DISTORTION TEST (POLYMERIC ENCLOSURE):		P
Oven temperature	Observations		
70°C for 7 hours	No damage, there was no shattering, cracking, or other damage to the enclosure that would expose internal wiring or live parts.		

--- End of report ---

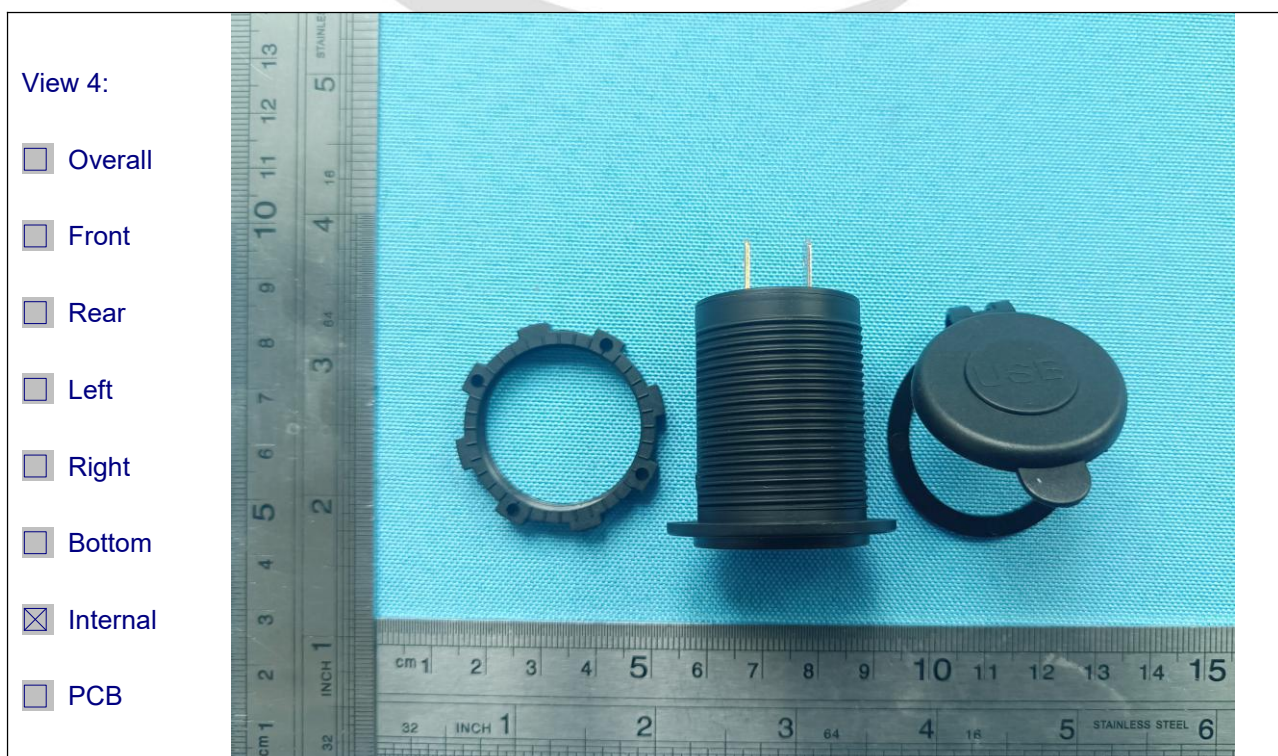


### Attachment 1: Photo documentations



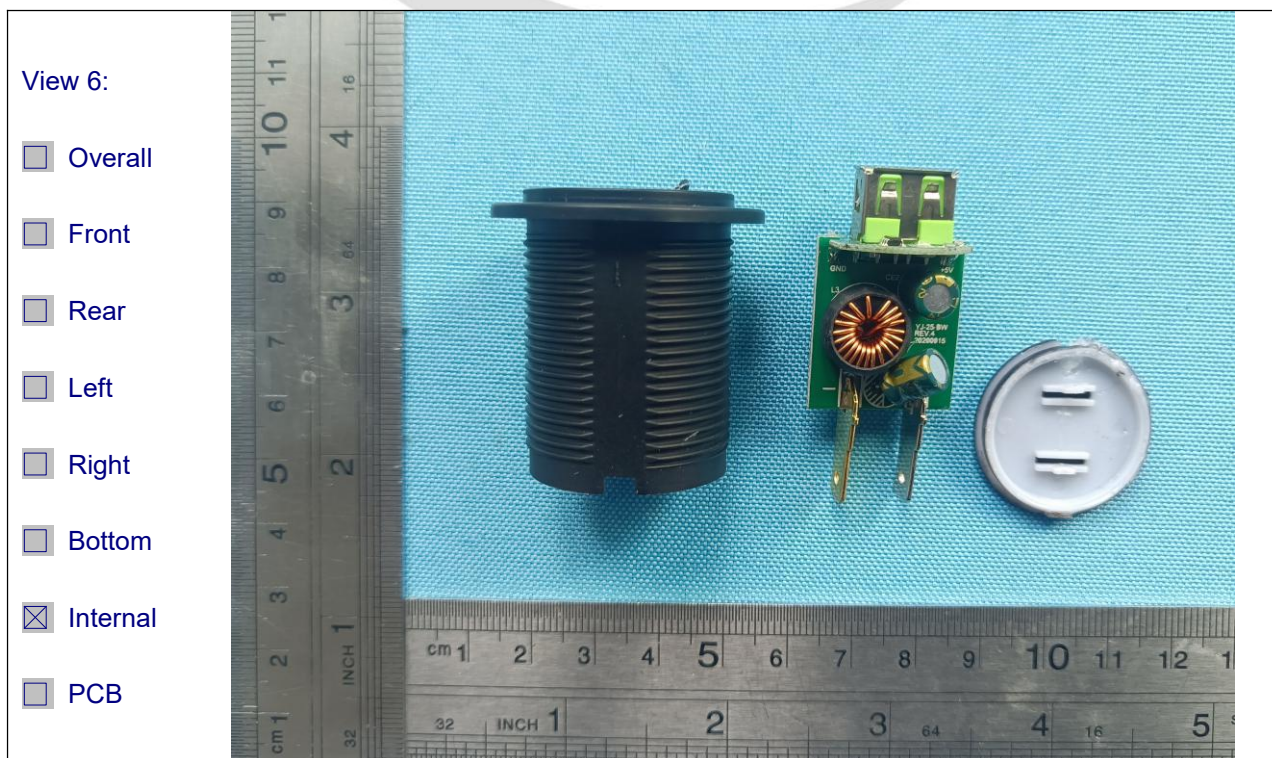


**Attachment 1: Photo documentations**



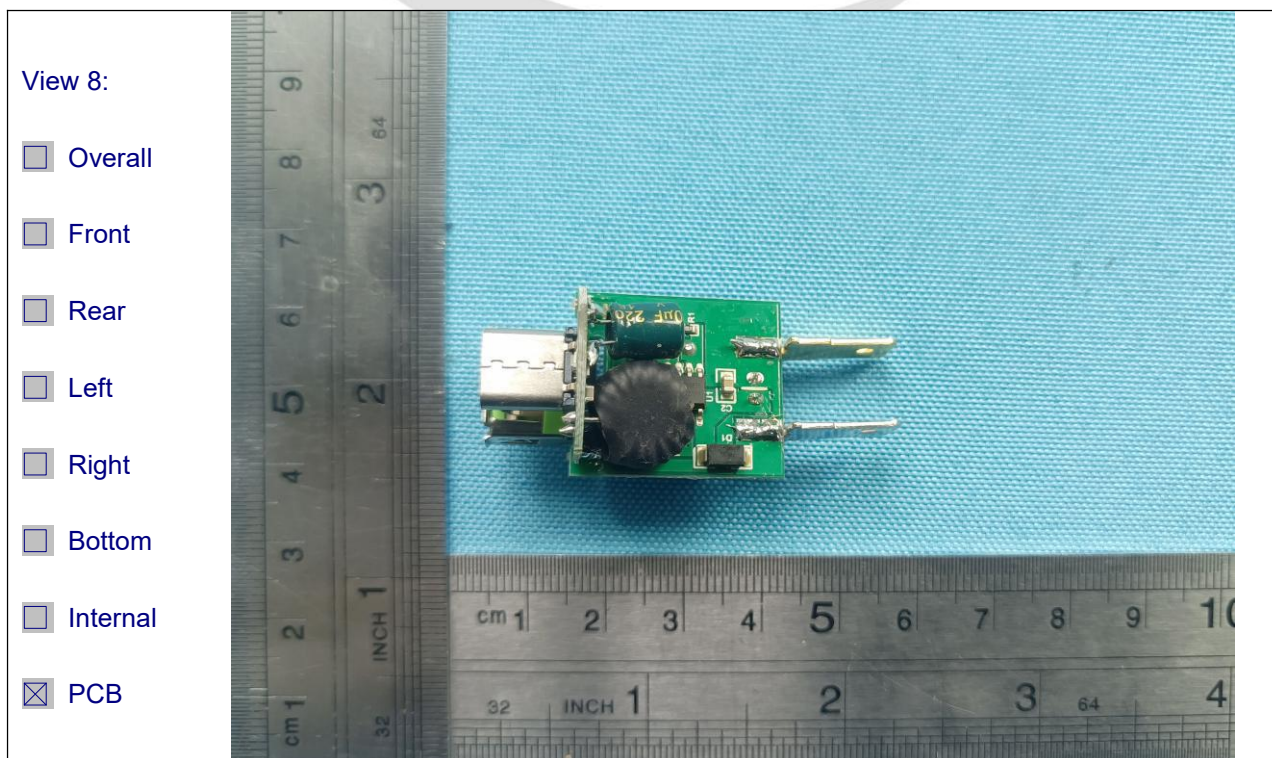
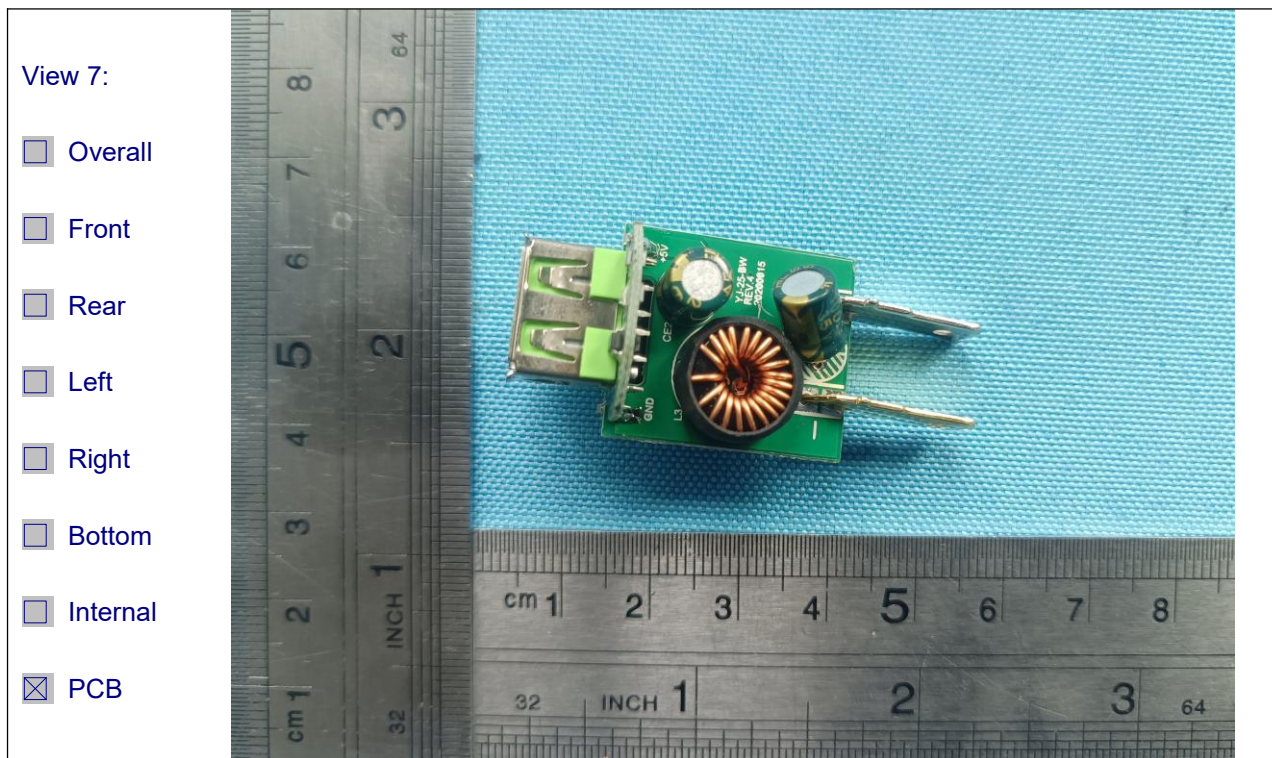


## Attachment 1: Photo documentations

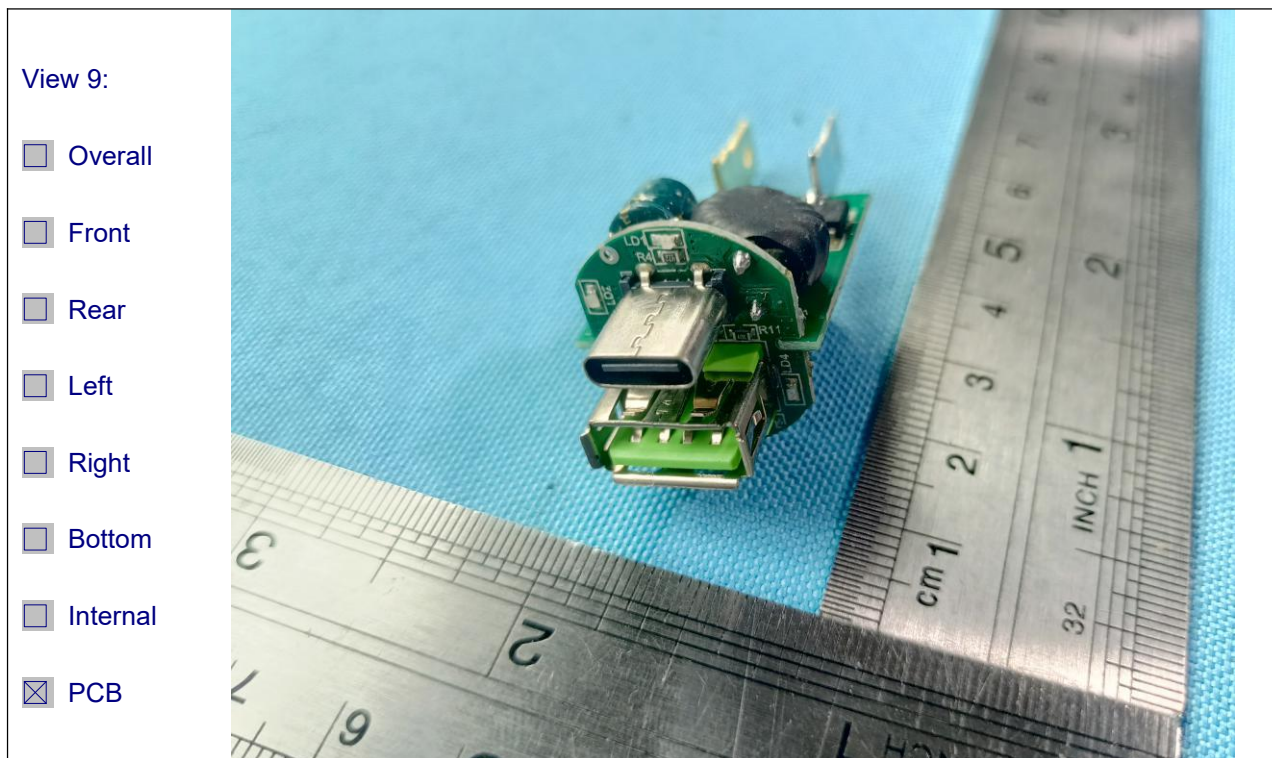




## Attachment 1: Photo documentations



### Attachment 1: Photo documentations



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**中鉴检测**  
CCTI TESTING