# Shenzhen wanmai technology innovation Co.,LTD

# TEST REPORT

**SCOPE OF WORK**
Test report

**REPORT NUMBER**
210623203GZU-001

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Report No.: 210623203GZU-001

# TEST REPORT

| | | |
|---|---|---|
| **Applicant** | **:** | Shenzhen wanmai technology innovation Co.,LTD |
| **Address** | **:** | 501, 5th Fir.BLDG 4, Pingshan Minqi Technology Park, No.65 Lishan Road Pingshan Community, Taoyuan Street, Nanshan, China |
| | | |
| **Sample Description** | | |
| Name of Sample | : | Portable Power Station |
| Model Number | : | Savior 300, Savior C300T, A15003 |
| Brand Name | : | Gearfly |
| Sample Development Level | : | prototype |
| Quantity of Sample(s) | : | 8 |
| Date of Receival | : | 8 Jun., 2021 |
| Date of test Conducted | : | 8 Jun., 2021 to 5 Jul., 2021 |
| Report Issue Date | : | 5 Jul., 2021 |
| | | |
| **Test** | | |
| Test Requested | : | Test report for Portable Power Packs according to UL 2743. |
| Test Method | : | Portable Power Packs [ANSI/CAN/UL 2743:2018 Ed.2+R:30Apr2020]. |
| Test Observation: | : | From the results of our examining and testing on the submitted samples, we are of the opinion that the submitted samples complied with the relative clause of above standard, see page 4-10. |
| Test Conclusion: | | The battery pack is tested according to UL 2743, recorded in ***Appendix A.*** |
| Other information | : | DC Input: 19VDC, 3.15A;<br>AC output: 110VAC, 60Hz, 300W;<br>Type-c output: 5VDC, 3A or 9VDC, 3A or 12VDC, 3A or 15VDC, 3A or 20VDC, 3A;<br>USB Output 1+USB Output 2: 5VDC, 2.4A;<br>USB Output 3: 5VDC, 2.4A or 9VDC, 2A or 12VDC, 1.5A;<br>DC Output 1+DC Output 2: 12DC, 10A;<br>Car charger output: 12DC, 10A;<br>Max. 400W total for all the outputs;<br>Internal Li-ion Battery Capacity: 14.8Vdc, 20AH;<br>Operation temperature: -10~40℃ |
| Remark | : | This test report is only for evaluation of the specified standard clauses listed in Test Requested.<br>Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty. |

# TEST REPORT

Tested by:

Kady Qin

Engineer

Approved by:

Spark He

Technical Supervisor

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The testing of this report is type tests. The requirements and tolerances permitted by this report are related to testing of a type-test sample submitted by the manufacturer for that purpose. Compliance of the type-test sample does not ensure compliance of the whole production of a manufacturer.

| 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) |

Factory: Shenzhen wanmai technology innovation Co.,LTD

Address: 501, 5th Fir.BLDG 4, Pingshan Minqi Technology Park, No.65 Lishan Road Pingshan Community, Taoyuan Street, Nanshan, China

The product covered by this report is a portable power pack, which contained DC/DC charging circuits, one input DC connector, DC/AC convert circuit, four USB output ports rated 5Vdc, two DC output ports rated 12Vdc,two AC output ports rated 110Vac, LED light, one built-in Li-ion polymer battery pack with 32 cells (8P4S) in series.

This product was supplied by a specified certified charger, which should be in accordance with UL 62368-1 and CAN/CSA C22.2 No. 62368-1 or UL 1310 and CAN/CSA C22.2 No. 223 or UL 1012 and CAN/CSA C22.2 No. 107. 2.

The enclosure of product was secured by tamper-proof screws, the product is intended to be used indoor only.

The wireless charging part is not considered.

# TEST REPORT

| **Appendix A:** | | | |
|---|---|---|---|
| **HOUSEHOLD AND COMMERCIAL BATTERIES - UL 2743** | | | |
| Clause | Requirement - Test | Result - Remark | Verdict |
| 1 | Scope | | P |
| 2 | Units of Measurement | | P |
| 3 | Components | | P |
| 4 | Undated References | | P |
| 5 | Glossary | | P |
| **Construction** | | | -- |
| 6 | General | | P |
| 6.1 | If the operation and maintenance of a power pack by the user involves a risk of injury to persons, a risk of electric shock, or a risk of fire, means shall be provided to reduce the risk. When evaluating a power pack, consideration shall be given to reasonably foreseeable misuse of the product. | | P |
| 6.2 | Power packs intended for use within a repair facility, and marked as such as indicated in 69.4, shall be provided with instructions containing the statement in 74.3 and shall be marked as shown in 70.19. Power packs that are not intended for use in a repair facility shall be marked in accordance with 70.20. | | N/A |
| 6.3 | Outdoor use power packs shall be evaluated for all environmental considerations addressed by this standard and are intended to be used and stored either outdoors or indoors. Temporary outdoor use power packs shall be evaluated for exposure to rain, shall be marked in accordance with 70.20 and 70.21, and shall be provided with instructions in accordance with 74.5. Indoor use only power packs shall be marked in accordance with 70.22 and shall be provided with instructions in accordance with 74.6. Indoor use only packs need not comply with the environmental considerations in 7.5. | Indoor use only, and the relevant mark and instruction not were not submitted for checking. | N/A |
| 6.4 | For power packs not marked in accordance with 70.23, the device shall be subjected to the Vibration Test, Section 51. | | P |
| 7 | Frame and Enclosure | | P |
| 7.1 | General | | P |
| 7.2 | Metallic enclosures | | N/A |
| 7.3 | Nonmetallic enclosures | Material information: V-0, RTI: 120°C | P |
| | Conductive coating | | N/A |
| 7.4 | Openings in enclosures | | P |
| 7.5 | Environmental considerations | Indoor use only | N/A |
| 8 | Flammability of Materials | See the CDF | P |
| 9 | Assembly | | P |

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| **Appendix A:** | | | |
|---|---|---|---|
| **HOUSEHOLD AND COMMERCIAL BATTERIES - UL 2743** | | | |
| Clause | Requirement - Test | Result - Remark | Verdict |
| 10 | Corrosion Protection | The material: | N/A |
| 11 | Supply Connections | | P |
| 11.1 | General | | P |
| 11.2 | Flexible cord connection | | N/A |
| 11.2.2 | Strain relief | | N/A |
| 11.2.3 | Bushings | | N/A |
| 11.3 | External power supplies | | N/A |
| 11.4 | Vehicle adapters | | N/A |
| 11.5 | Photovoltaic panels | | N/A |
| 12 | Output Connections | | P |
| 12.1 | General | Tested with appliance | P |
| 12.2 | Booster cable assemblies | No booster cable assemblies | N/A |
| 12.2.1 | General | | N/A |
| 12.2.2 | Cables | | N/A |
| 12.2.3 | Clamps | | N/A |
| 12.3 | Receptacles | | P |
| 12.4 | DC output connectors and USB connectors | Comply with UL 1977 | P |
| 12.5 | Vehicle adapter sockets | | N/A |
| 13 | Grounding | | N/A |
| 13.1 | General | | N/A |
| 13.2 | Grounding identification | | N/A |
| 14 | Double Insulated Products | | N/A |
| 15 | Current Carrying Parts | | P |
| 16 | Internal Wiring | | P |
| 16.1 | Mechanical protection | | P |
| 16.2 | Wiring insulation | | N/A |
| 16.3 | Splices and connections | | P |
| 17 | Separation of Circuits | | N/A |
| 18 | Insulating Materials | | N/A |
| 19 | Compressors | | N/A |
| 19.1 | General | | N/A |
| 19.2 | Motors and thermal protection | | N/A |
| 19.3 | Parts subject to pressure | | N/A |
| 19.3.1 | A part of the power pack that is subject to pressure during normal or anticipated abnormal operation shall withstand, without rupture, a pressure corresponding to five times the maximum pressure that can be developed by the system. | | N/A |

# TEST REPORT

| **Appendix A:** | | | |
|---|---|---|---|
| **HOUSEHOLD AND COMMERCIAL BATTERIES - UL 2743** | | | |
| Clause | Requirement - Test | Result - Remark | Verdict |
| 19.3.2 | In the event that a test is required to determine whether a part complies with the requirement in 19.3.1, two samples of the power pack are to be subjected to the Hydrostatic Strength Test, Section 59. Prior to the test, parts molded of polymeric material are to be conditioned in an air circulating oven for 7 hours at a temperature of 70°C (158°F) or 10°C (18°F) higher than the maximum temperature measured on the part under normal load, whichever is greater. The samples are to be removed from the oven and allowed to cool to room temperature prior to the test. | | N/A |
| 20 | Capacitors and Electrochemical Capacitor Modules | | N/A |
| 20.1 | Capacitors | | N/A |
| 20.2 | Electrochemical capacitor modules | | N/A |
| 21 | Resistors | | P |
| 22 | Lampholders | | N/A |
| 23 | Transformers | | P |
| 24 | Switches and Controls | | N/A |
| 24.1 | A switch or other control device shall be suitable for the application and shall have current and voltage ratings not less than those of the circuit that it controls when the power pack is operated as intended. | | N/A |
| 24.2 | A primary circuit switch that controls an inductive load having a power factor less than 75 percent, such as a transformer, and that does not have an inductive rating, shall be rated not less than twice the full load current rating of the load, or the switch shall be investigated for this application. | | N/A |
| 24.3 | A switch or other control device not having an inductive rating that is connected in a transformer secondary circuit shall comply with the Normal Temperature Test, Section 47, and with the Overload of switches and controls test, Section 53.2. | | N/A |
| 24.4 | Unless rated for the application, a switch or other device that controls a motor and is not interlocked so that it will not break the locked rotor motor current shall be subjected to the Overload of switches and controls test, Section 53.2, based on the locked rotor current of the motor. | | N/A |
| 24.5 | A switch that controls a tungsten-filament lamp shall have a tungsten-filament lamp current rating not less than the maximum current it will control. | | N/A |
| 24.6 | A switch shall not disconnect the grounded conductor of a circuit. | | N/A |

| **Appendix A:** | | | |
|---|---|---|---|
| **HOUSEHOLD AND COMMERCIAL BATTERIES - UL 2743** | | | |
| Clause | Requirement - Test | Result - Remark | Verdict |
| 24.7 | If unintentional operation of a switch results in a risk of injury to persons, the actuator of the switch shall be located or guarded so that such operation is unlikely. The actuator of a switch may be guarded by recessing, ribs, barriers, or the like. | | N/A |
| 25 | Printed Wiring Boards | V-0 | P |
| 26 | Interlocks | | N/A |
| 27 | Overload Protection Devices | | P |
| 27.1 | An overcurrent or thermal protective device shall be suitable for the application. | | N/A |
| 27.2 | An automatic reset device used to comply with 27.1 shall be cycled through 200 operations. At the end of the 200 operations, the device shall be able to perform its intended function with no additional risk of fire, electric shock, or injury to persons. See Overload of protection devices, Section 53.3. | | N/A |
| 27.3 | A fuse involving a risk of electric shock shall be inaccessible:<br>a) To the user from outside the enclosure, and<br>b) To the user during any user servicing. | | N/A |
| 27.4 | A fuse that can be serviced by the user shall be secured in a fuseholder that is constructed and installed such that no uninsulated live parts will be accessible to contact by persons removing or replacing the fuse. The power pack shall be marked in accordance with 70.10. This marking shall be adjacent to the fuse. | | N/A |
| 27.5 | The screw shell of a plug fuseholder and the accessible contact of an extractor type fuseholder shall be connected to the load. | | N/A |
| 28 | Internal Battery | Li-ion Cells comply with UL 1642 | P |
| 28.1 | General | | P |
| 28.2 | Lead acid batteries | | N/A |
| 28.2.1 | A lead acid battery shall comply with the requirements in the Standard for Standby Batteries, UL 1989. | | N/A |
| 28.2.2 | The power pack shall provide a means of reverse polarity protection or the test of 50.3 shall be performed. | | N/A |
| 28.2.3 | The power pack shall provide short circuit protection for the battery or the test of 50.2 shall be performed. | | N/A |
| 28.2.4 | The power pack shall provide a means to prevent overcharge of the battery or the test of 50.9 shall be performed. | | N/A |
| 28.2.5 | The battery shall be subjected to the Normal Operation Charging Test, Section 43. | | N/A |

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| **Appendix A:** | | | |
|---|---|---|---|
| **HOUSEHOLD AND COMMERCIAL BATTERIES - UL 2743** | | | |
| Clause | Requirement - Test | Result - Remark | Verdict |
| 28.3 | Lithium-ion batteries | | P |
| 28.3.1 | A lithium-ion battery cell shall comply with the requirements in the Standard for Lithium Batteries, UL 1642, or in the Standard for Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes – Safety Requirements for Portable Sealed Secondary Cells, and for Batteries Made From Them, for Use in Portable Applications, UL 62133. | Complied with UL 1642 | P |
| 28.3.2 | The power pack shall provide a means of reverse polarity protection or the test of 50.3 shall be performed. | | P |
| 28.3.3 | The power pack shall provide short circuit protection for the battery or the test of 50.2 shall be performed | | P |
| 28.3.4 | The power pack shall provide a means to prevent overcharge of the battery or the test of 50.9 shall be performed. | | P |
| 28.3.5 | The battery shall be subjected to the Normal Operation Charging Test, Section 43. | | P |
| 28.3.6 | The power pack shall be subjected to the Lithium-Ion Charging System Test, Section 44. | | P |
| 29 | Spacings | | P |
| 30 | Inverters | | P |
| 30.1 | Inverters provided as part of the power pack shall be shown to comply with the applicable requirements in this outline. See 30.2.<br>Exception: Inverters that comply with the Standard for Power Units Other Than Class 2, UL 1012, comply without further evaluation. | | N/A |
| 30.2 | With reference to 30.1, specific attention should be given to:<br>a) Printed Wiring Boards, Section 25;<br>b) Spacings, Section 29;<br>c) Normal Temperature Test, Section 47;<br>d) Dielectric Voltage Withstand Test, Section 48; and<br>e) Abnormal Operation Tests, Section 50. | | N/A |
| 31 | Charging Functions | | N/A |
| 31.1 | Specialized packs that provide a charging function while connected to the source of supply that is intended to charge the external battery through the pack's booster cable assembly, or other output connection, shall have the charging circuits evaluated in accordance with the applicable requirements in the Standard for Battery Chargers for Charging Engine-Starter Batteries, UL 1236. | | N/A |
| **Protection Against Injury To Persons** | | | P |
| 32 | General | | P |
| 33 | Back Feed Protection | | P |
| 34 | Sharp Edges | | P |

# TEST REPORT

| **Appendix A:** | | | |
|---|---|---|---|
| **HOUSEHOLD AND COMMERCIAL BATTERIES - UL 2743** | | | |
| Clause | Requirement - Test | Result - Remark | Verdict |
| 35 | Strength of Enclosure | | P |
| 36 | Attachments | | P |
| 37 | Stability | | P |
| 38 | Strength of Handles | | P |
| 39 | Surface Temperatures | | P |
| 40 | Safety Circuits and Control Circuits | | P |
| **PERFORMANCE** | | | |
| 41 | General | | P |
| 42 | Power Input Test | | P |
| 43 | Normal Charging Operation Test | | P |
| 44 | Lithium Charging System Test | | P |
| 45 | Capacitor Discharge Test | | N/A |
| 46 | Leakage Current Test | | P |
| 47 | Normal Temperature Test | | P |
| 47.1 | General | | P |
| 47.2 | Maximum normal load | | P |
| 47.3 | Power pack ampacity temperature test | | P |
| 48 | Dielectric Voltage Withstand Test | | P |
| 49 | Leakage Current Following Humidity Conditioning | | P |
| 50 | Abnormal Operation Tests | | P |
| 50.1 | General | | P |
| 50.2 | Output short test | | P |
| 50.3 | Reverse polarity of booster cables | | N/A |
| 50.4 | Component faults | | P |
| 50.5 | Relay and solenoid burnout | | N/A |
| 50.6 | Printed wiring board abnormal test | | N/A |
| 50.7 | Disconnected fan test | | P |
| 50.8 | Blocked ventilation test | | P |
| 50.9 | Overcharging test | | P |
| 50.10 | Internal battery reverse polarity test | Without removable internal batteries | N/A |
| 51 | Vibration test | | P |
| 52 | Ground Continuity | | N/A |
| 53 | Overload Tests | | P |
| 53.1 | General | | N/A |
| 53.2 | Overload of switches and controls test | No such component | N/A |
| 53.3 | Overload of protection devices | No such component | N/A |
| 53.4 | Overload of interlocks | detachable flexible cord | N/A |
| 54 | Strain Relief Test | | N/A |
| 54.1 | General | | N/A |
| 54.2 | Push-back strain relief test | | N/A |
| 55 | Strength of Enclosure Tests | | P |
| 55.1 | General | | P |
| 55.2 | Impact test | | P |
| 55.3 | Drop test | | P |

# TEST REPORT

| **Appendix A:** | | | |
|---|---|---|---|
| **HOUSEHOLD AND COMMERCIAL BATTERIES - UL 2743** | | | |
| Clause | Requirement - Test | Result - Remark | Verdict |
| 56 | Mold Stress Test | The oven temperature 70°C, 7 hours. | P |
| 57 | Strength of Handles Test | The weight of the product__3.50___kg<br>The force on the handle___140___N<br>The count of the handle___1__ | P |
| 58 | Stability Test | | P |
| 59 | Hydrostatic Strength Test | | N/A |
| 60 | Rain Test | Indoor use only | N/A |
| 61 | Tests on Insulating Materials | | N/A |
| 62 | Accelerated Aging of Gaskets, Sealing Compounds, and Adhesives Test | | N/A |
| 63 | Metallic Coating Thickness Test | Plastic enclosure | N/A |
| 64 | Permanency of Wrapped Hang Tag Marking | | N/A |
| 65 | Power Pack Ampacity Test | | N/A |
| 66 | Back Feed Test | | P |
| 67 | Cold Bend Test | | N/A |
| 68 | Clamp Tests | | N/A |
| 68.1 | General | | N/A |
| 68.2 | Cold drop test | | N/A |
| 68.3 | Dielectric voltage-withstand test | | N/A |
| 68.4 | Secureness test | | N/A |
| **Marking (69-70)** | | The marking provided by applicant, but the marking complied the UL 2743. | P |
| **Instructions (71-76)** | | The instructions provided by applicant, but the marking complied the UL 2743. | P |

# TEST REPORT

Appendix: List of critical components (Partial)

| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | standard | Mark(s) of conformity[1]) |
|---|---|---|---|---|---|
| Plastic enclosure | CHI MEI CORPORATION | PA-765A(+) | ABS, V-0, minimum RTI:80°C, min. thickness 1.5mm | UL 94, UL 746C | UL E56070 |
| AC output receptacle | ZHEJIANG LECI ELECTRONICS CO LTD | DB-F-M | 125Vac, 15A, 1-15R, Two blade | UL 60320-1 | UL E309671 |
| USB output port | AMPHENOL TECHNOLOGY (ZHUHAI) CO LTD | C10-670932-B2P | 5Vdc | UL1977 | UL E335170 |
| All Round Output controller | KINGFA SCI & TECH CO LTD | FW-620T | ABS, minimum RTI: 80°C , minimum thickness 1.5mm, V-0 | UL 746 | UL E171666 |
| DC fan | SHENZHEN YCCFAN TECHNOLOGY CO LTD | YDH6015C12F | 12Vdc, 0.18A | UL 507 | UL E465296 |
| Internal lead wire | DONGGUAN CHENG XING ELECTRONIC CO LTD | 2468 | VW-1, 26AWG, 300V, 80°C | UL 758 | UL E249743 |
| Internal lead wire Alternative | Various | 2468 | VW-1min. 26AWG, 300V, 80°C | UL 758 | UL |
| Heat shrinkable tube | SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD | RSFR | 600V, 125°C, VW-1, min. thickness 0.25mm | UL 224 | UL E203950 |
| Heat shrinkable tube Alternative | Various | Various | 600V, 125°C, VW-1, min. thickness 0.25mm | UL 224 | UL |
| L1 | Shenzhen Hongtuhaoran Electronics Co., Ltd. | TM140905-502-01A | 2.6mH min., 130°C | UL 2743 | Tested with appliance |
| Magnet Wire | PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO LTD | UEW-B | 130°C | UL 1446 | UL E201757 |
| LF1 | Shenzhen Hongtuhaoran Electronics Co., Ltd. | TM140905-502-01A | 10uH min., 130°C | UL 2743 | Tested with appliance |
| Magnet Wire | PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO LTD | UEW-B | 130°C | UL 1446 | UL E201757 |

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| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | standard | Mark(s) of conformity[1]) |
|---|---|---|---|---|---|
| Heat shrinkable tube | SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD | RSFR | 600V, 125°C, VW-1, min. thickness 0.25mm | UL 224 | UL E203950 |
| Y Capacitor | SHENZHEN HAOTIAN ELECTRONIC CO LTD | HT | Y1, Max.2200pF, 400V, 125°C min | UL 60384-14 | UL E326483 |
| Optocoupler | EVERLIGHT ELECTRONICS CO LTD | EL817 | Double protection optical isolators, providing 5000 Vac isolation | UL 1577 | UL E214129 |
| Transformer | Shenzhen KAM YEE PAK Technology Co. , Ltd. | 4S300-110V-V01 | Class B, 130°C | UL 2743 | Tested with appliance |
| -bobbin | Chang Chun Plastics Co Ltd | T375J | Phenolic, V-0 | UL 94 | UL E59481 |
| -Magnet wire | PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO LTD | UEW/U@ | 130°C | UL 1466 | UL E201757 |
| -Triple insulated wire | Totoku Electric Co Ltd | TIW-3 | 155°C | UL 2353 | UL E166483 |
| -Insulation tape | JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD | PF* (d)(g) | 180°C | UL 510 | UL E165111 |
| -Tube | Great Holding Industrial Co Ltd | TFT | 300V min., 200°C, VW-1 | UL 224 | UL E156256 |
| --varnish | SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD | T-1168(a) | 155°C | UL1446 | UL E228349 |
| Internal wire for battery | DONGGUAN CHENG XING ELECTRONIC CO LTD | 1015 | VW-1, 10AWG, 300V, 105°C | UL 758 | UL E249743 |
| Internal wire for battery Alternative | Various | 1015 | VW-1, 10AWG, 300V, 105°C | UL 758 | UL |
| Internal wire for signal | DONGGUAN CHENG XING ELECTRONIC | 2468 | VW-1, 24AWG, 300V, 80°C | UL 758 | UL E249743 |

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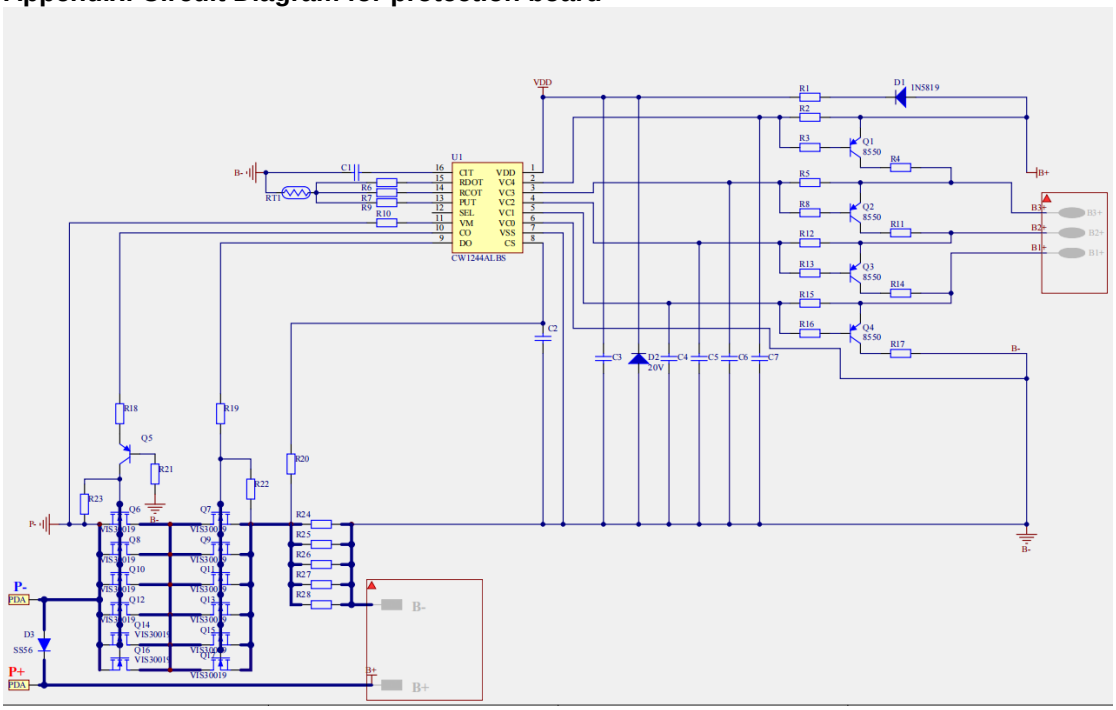
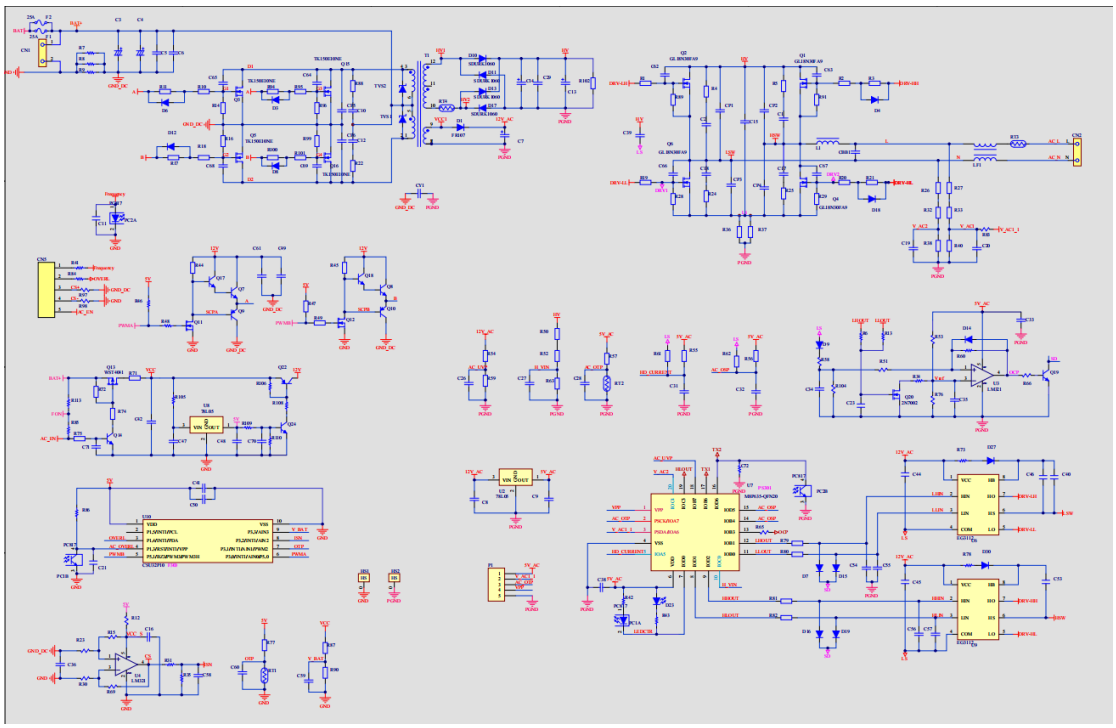
| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | standard | Mark(s) of conformity[1]) |
|---|---|---|---|---|---|
| | CO LTD | | | | |
| Internal wire for signal<br>Alternative | Various | 2468 | VW-1, 24AWG, 300V, 80°C | UL 758 | UL |
| DC Current Fuse | DONG GUAN ANDU ELECTRONICS CO LTD | MIN | 25A, 48V | UL 248 | UL E317400 |
| PCB | MEIZHOU TONGZHENG ELECTRONIC CO LTD | EC-3 | V-0, 130°C, minimum thickness 1.5mm | UL 94 UL 796 | UL E477626 |
| PCB<br>Alternative | Interchangeable | Interchangeable | V-0, 130°C, minimum thickness 1.5mm | UL 94 UL 796 | UL |
| Battery protective IC on battery protection | CELLWISE MICROELECTRONICS CO LTD | CW1046 | Over charge protection voltage:4.175-4.350V, Over discharge protection voltage:2.300-3.000V, Temperature rang:-40~75℃ | UL 2743 | Tested with appliance |
| Battery cell | GUANGXI ZHUONENG NEW ENERGY TECHNOLOGY CO LTD | INR18650S-2500mAh | Max Charging Voltage:4.2V, 2500mAh | UL 1642 | UL MH61981 |
| AC ADAPTOR | Shenzhen yingyuan Electronics Co.,Ltd | YHY-19003150 | Input: 100-240V~, 50/60Hz, 1.5A<br>Output: 19V.dc, 3.15A | UL 62368-1 | UL E480146 |
| Label (not shown) | Various | Various | Min. 80°C, suitable for plastic enclosure | UL 969 | UL |

# TEST REPORT

**Appendix: Circuit Diagram for protection board**

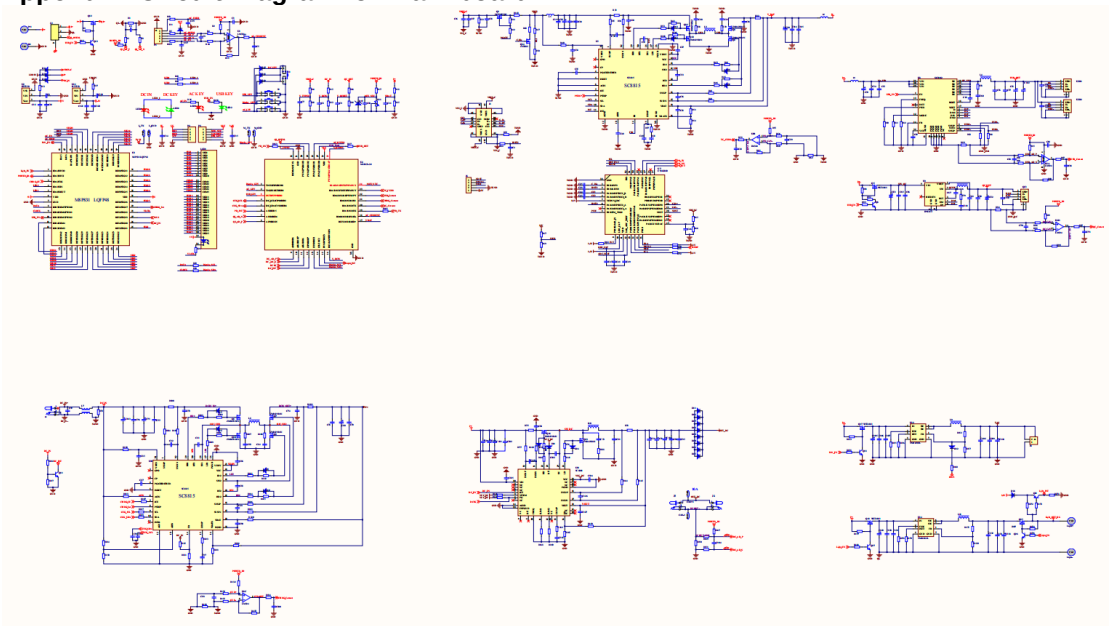



**Appendix: Circuit Diagram for Inverter board**

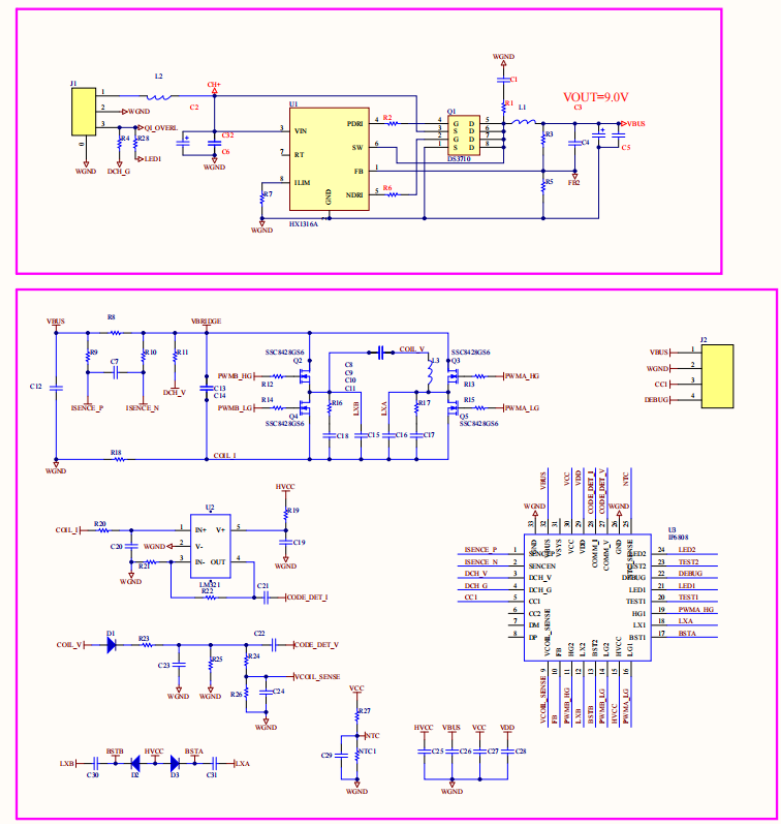


# TEST REPORT

**Appendix: Circuit Diagram for main board**

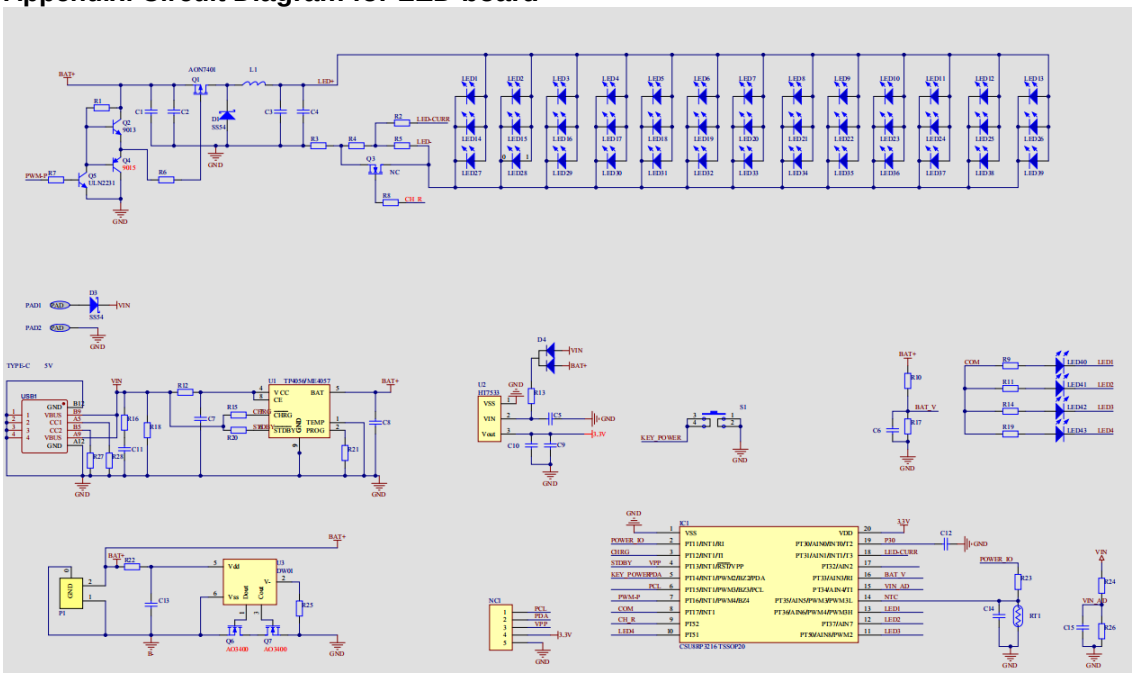


**Appendix: Circuit Diagram for wireless board**



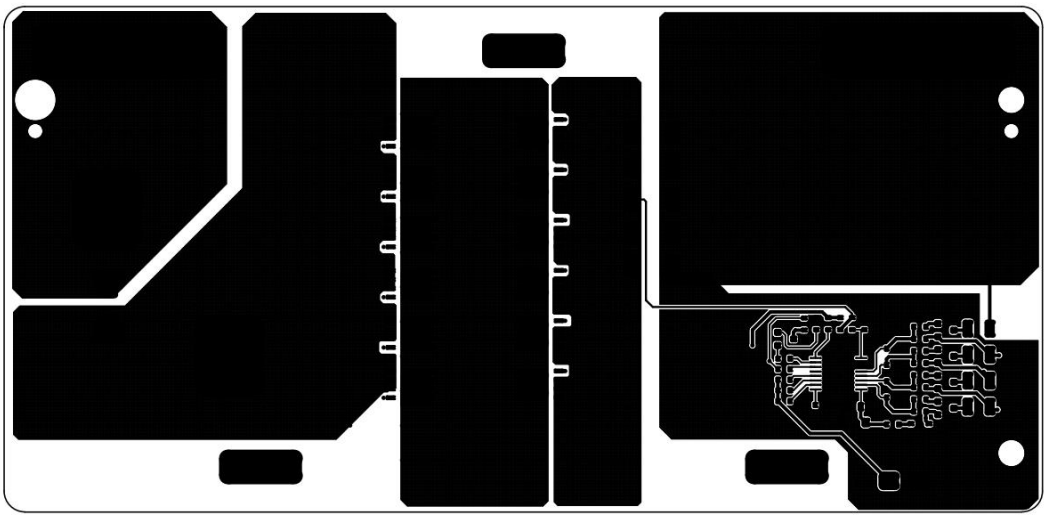
# TEST REPORT

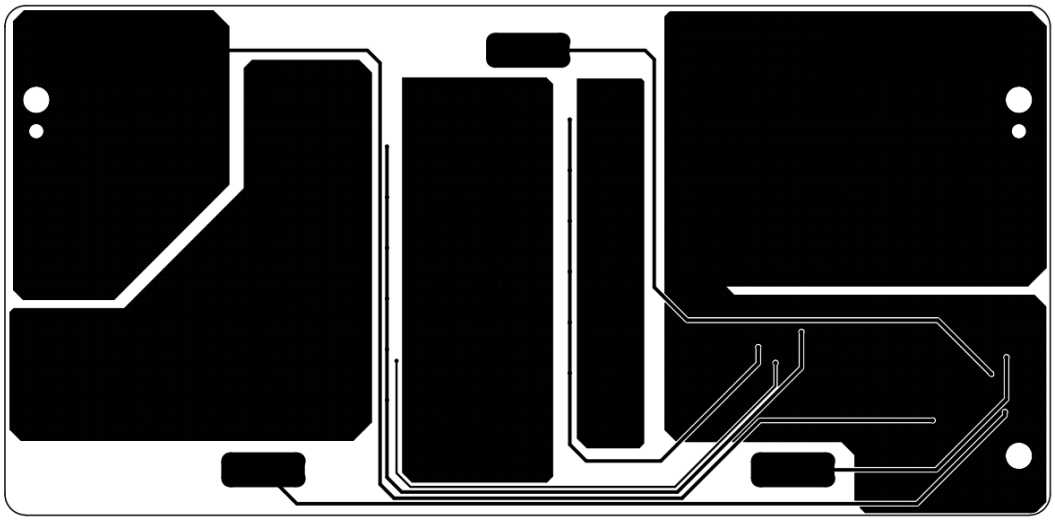
**Appendix: Circuit Diagram for LED board**

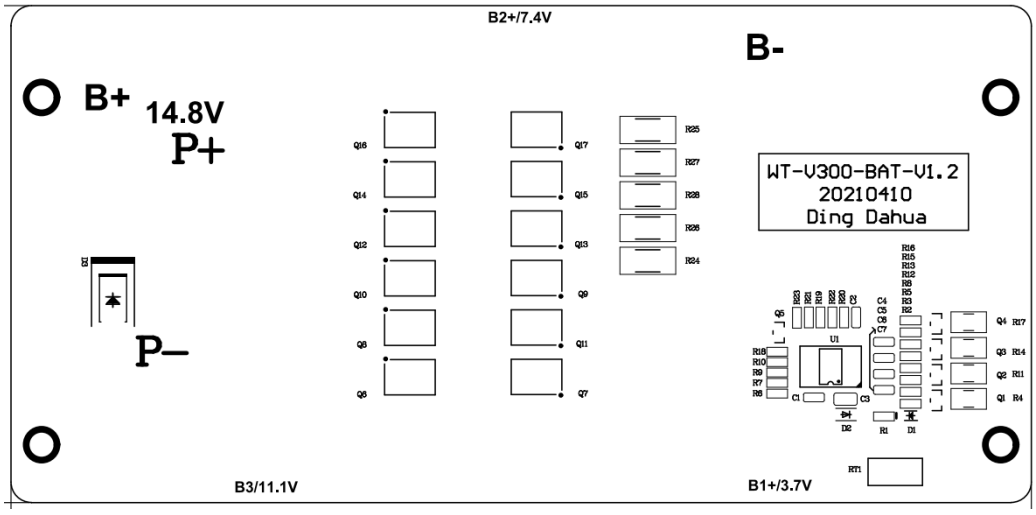


# TEST REPORT

**Appendix: PCB layout for protection board**

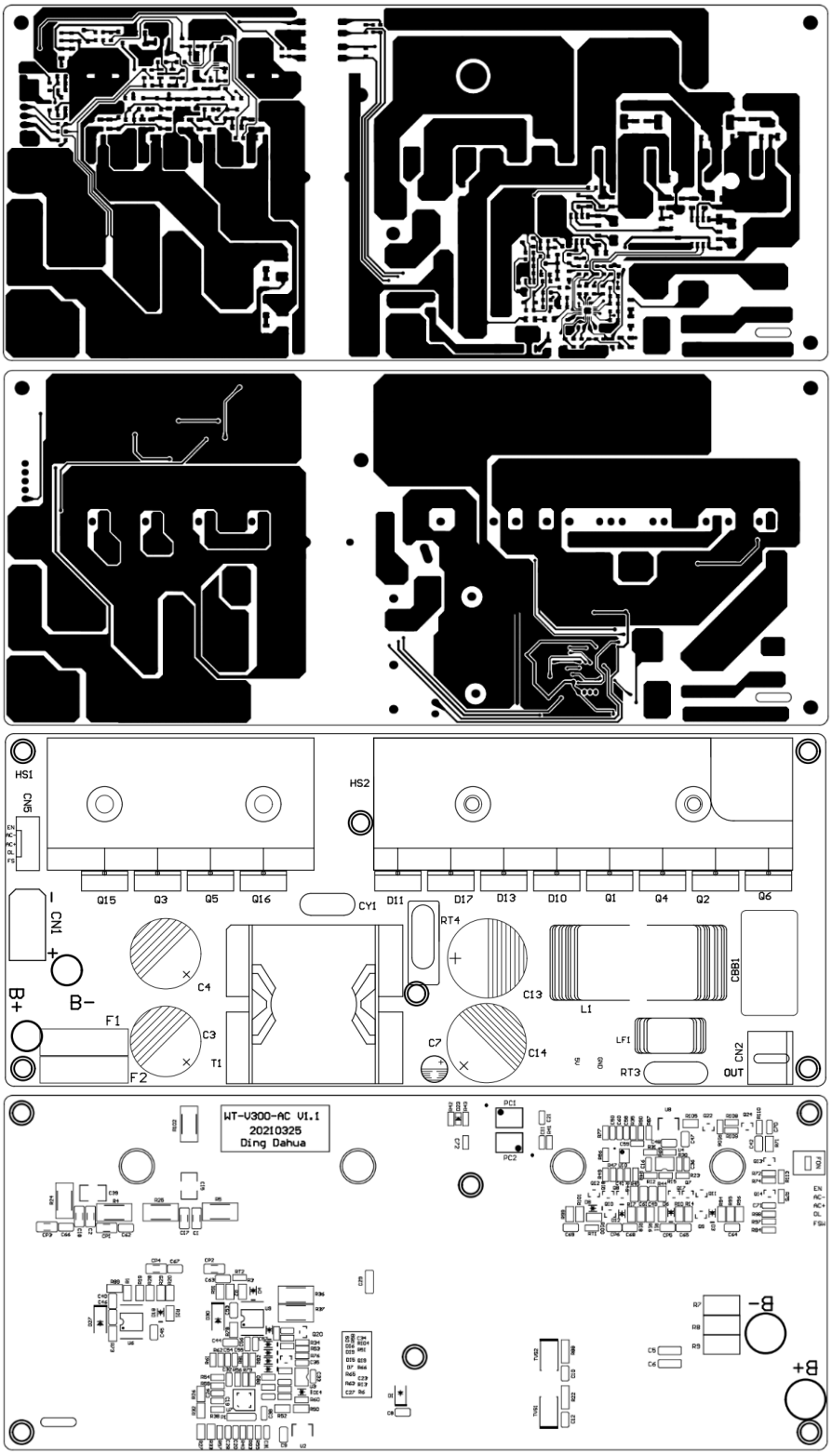






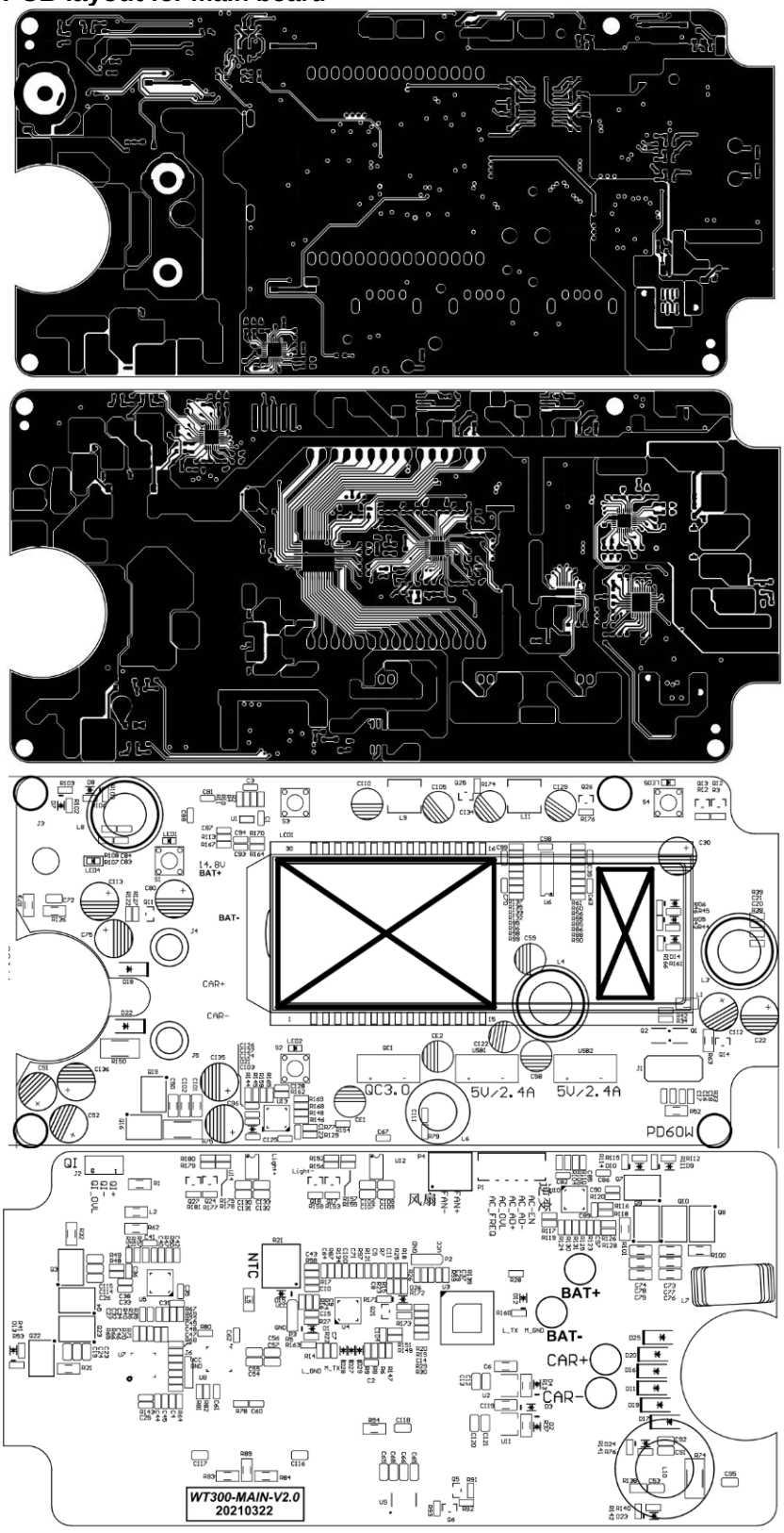
# TEST REPORT

**Appendix: PCB layout for Inverter board**



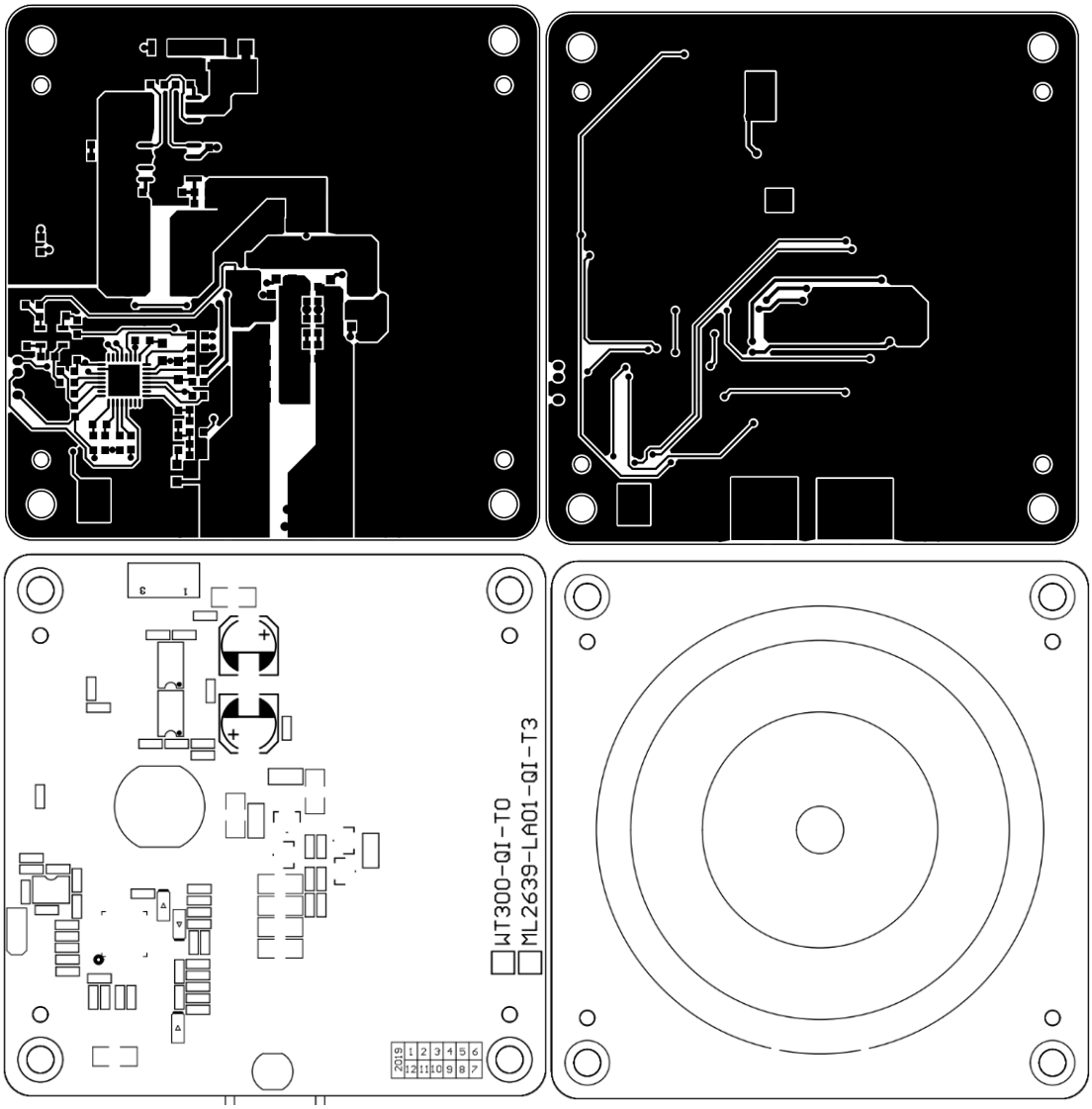
# TEST REPORT

**Appendix: PCB layout for main board**



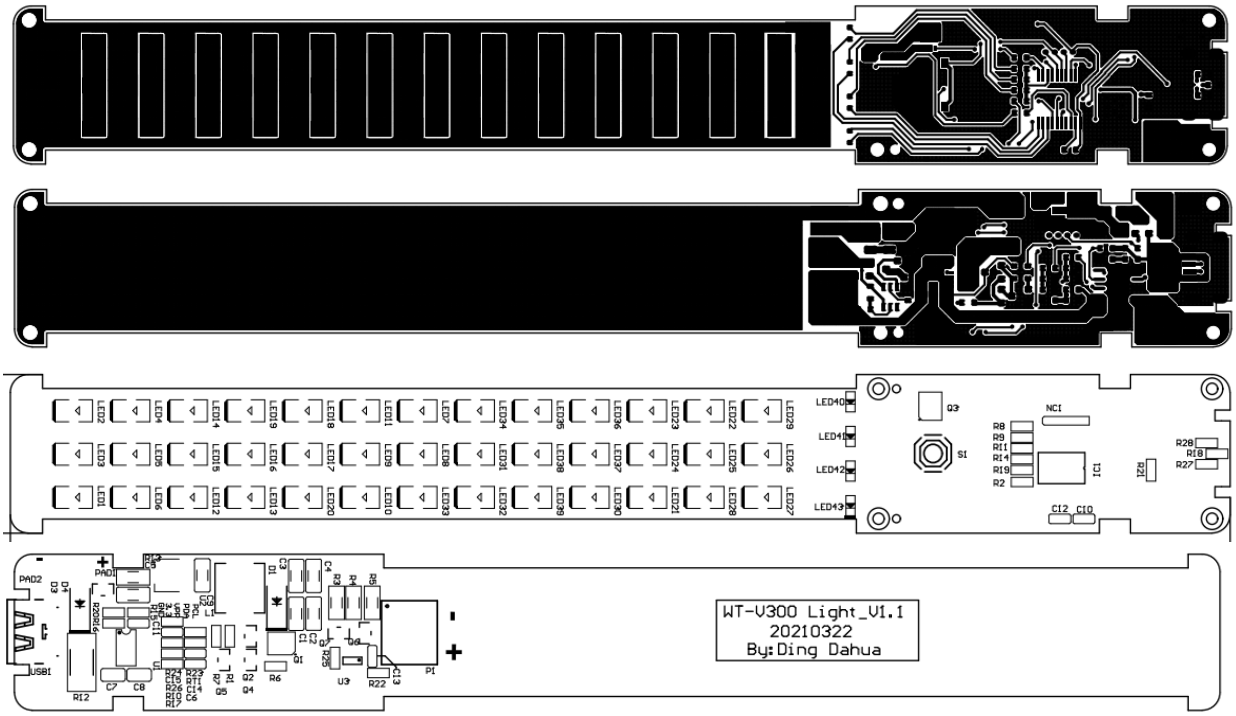
# TEST REPORT

**Appendix: PCB layout for wireless board**



# TEST REPORT

**Appendix: PCB layout for LED board**



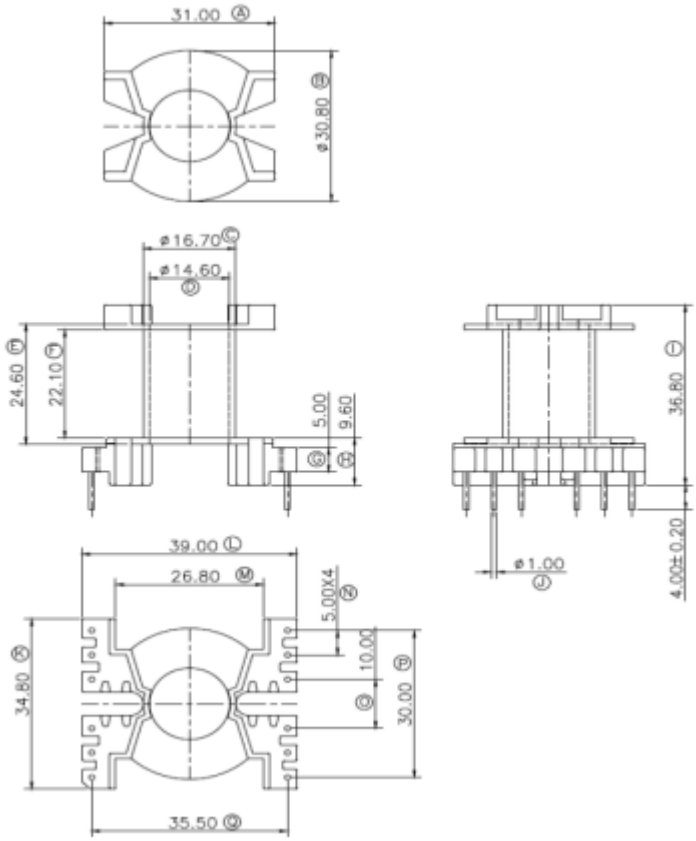
# TEST REPORT

**Appendix: Battery Packs specification**

| 序号 | 项目 | 特征值 | 备注 Note |
|---|---|---|---|
| 1 | 产品重量 | 约 1650g | |
| 2 | 组合方式 | 4S8P | |
| 3 | 出货电压 | ≥12V | |
| 4 | 典型容量 | 20Ah | 0.2 $C_5$A 充放电至截至电压 |
| 5 | 标称电压 | 14.8V | |
| 6 | 充电截止电压 | 16.8V | |
| 7 | 放电截止电压 | 11V | |
| 8 | 标准充电电流 | 4A | 0.2 $C_5$A |
| 9 | 建议充电电流 | 4A | 0.2 $C_5$A(T≥10℃) |
| 10 | 标准放电电流 | 4A | 0.2 $C_5$A |
| 11 | 快速放电电流 | 20A | 1$C_5$A |
| 12 | 最大支持放电电流 | 60A | 3 $C_5$A(T≥0℃)<br>(正负极导线最大支持<br>25A 放电电流) |
| 13 | 短路保护 | 有 | |
| 14 | 工作温度 | 0~+60°C | 充电 |
| 15 | | -10~+60°C | 放电 |

# TEST REPORT

**Appendix: Specification of Transformer (for Inverter)**



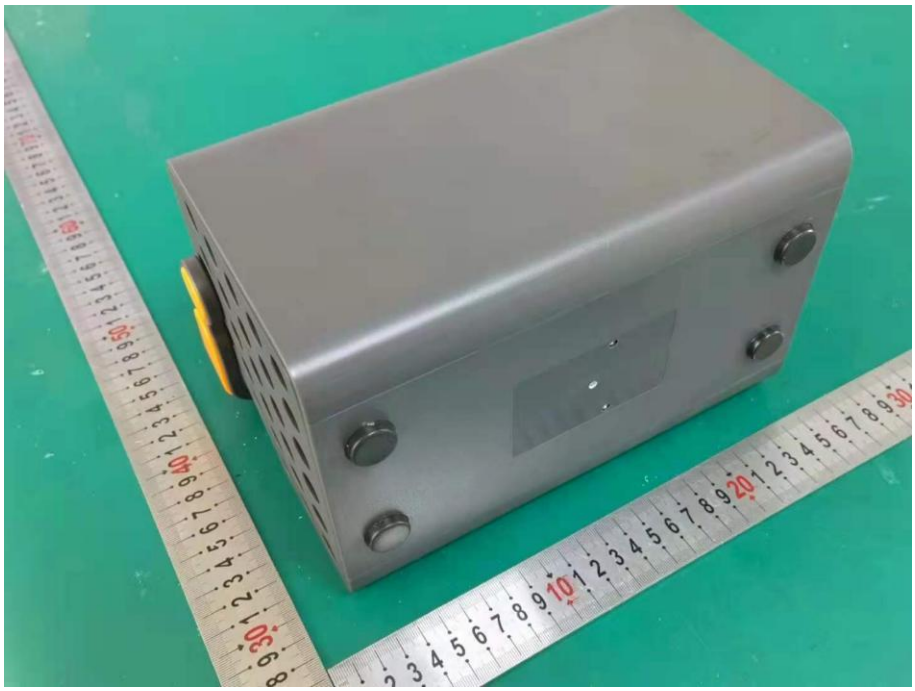

| 层别 | 脚位(起~结) | 线径与股数 | 圈数 | 胶带层数 |
|---|---|---|---|---|
| N1 | 10头～11尾 | φ0.7mm三层绝缘线, 1股 | 42圈 | 3L |
| N2 | 3,4头～5,6尾 | 0.20mm厚*18mm宽 铜箔 | 4 圈 | 3L,连续绕线 |
| N3 | 5,6头～1,2尾 | 0.20mm厚*18mm宽 铜箔 | 4 圈 | |
| N4 | 11头～12尾 | φ0.7mm三层绝缘线, 1股 | 15 圈 | 2L |
| N5 | 7头～9尾 | φ0.35mm三层绝缘线, 1股 | 4 圈 | 2L |

# TEST REPORT

**Photo of the appliance:**

# TEST REPORT

**Photo of the appliance:**



# TEST REPORT

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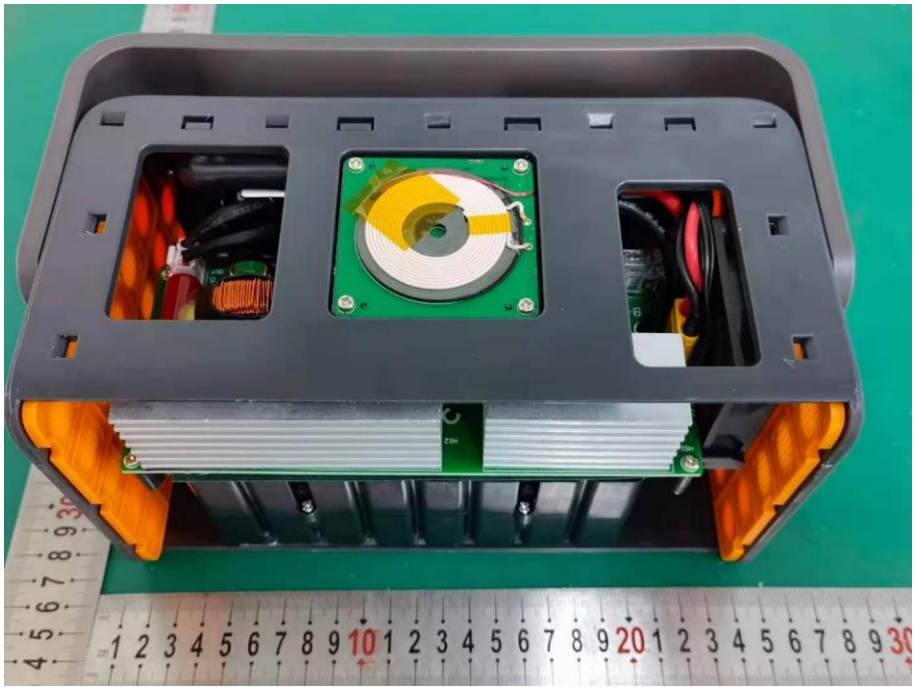

# TEST REPORT

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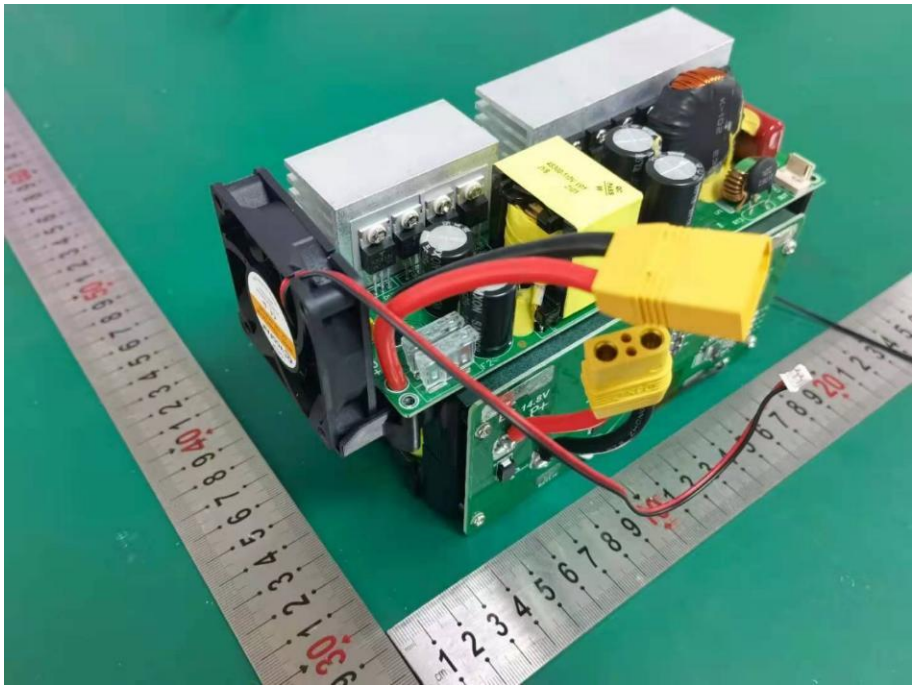

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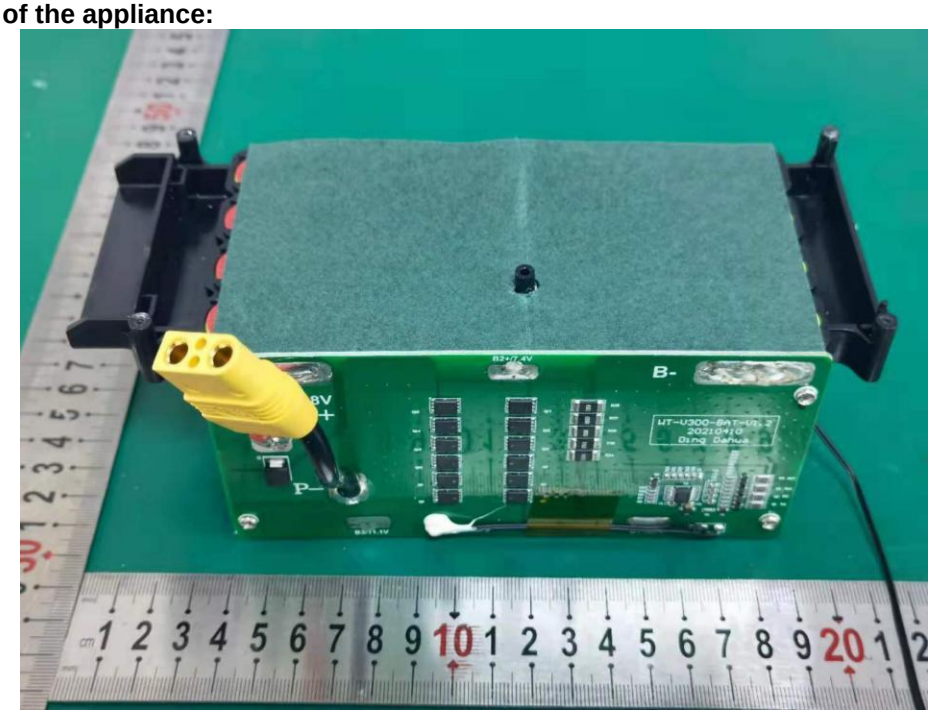


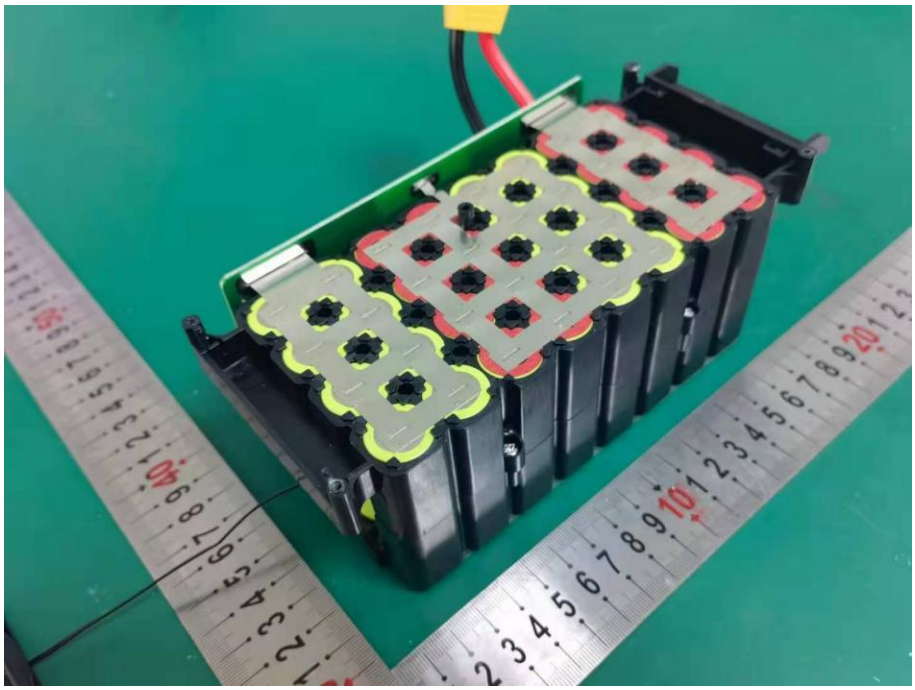

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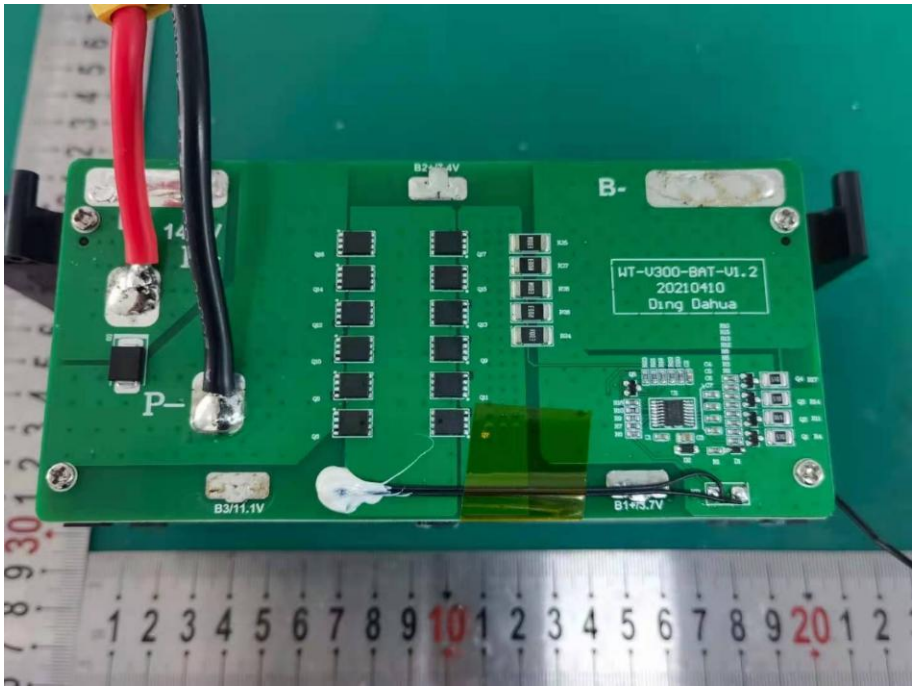


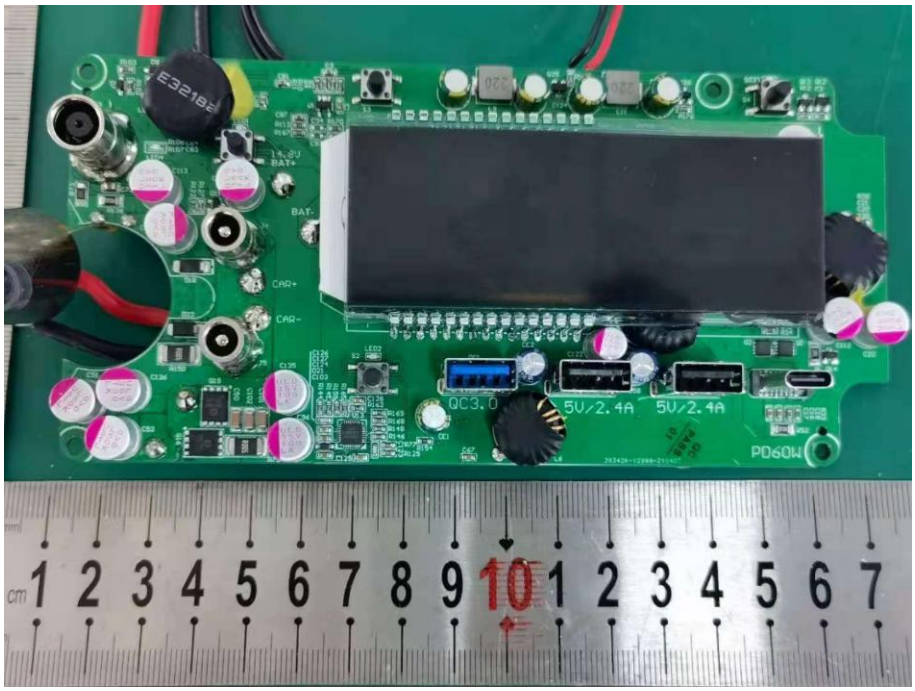

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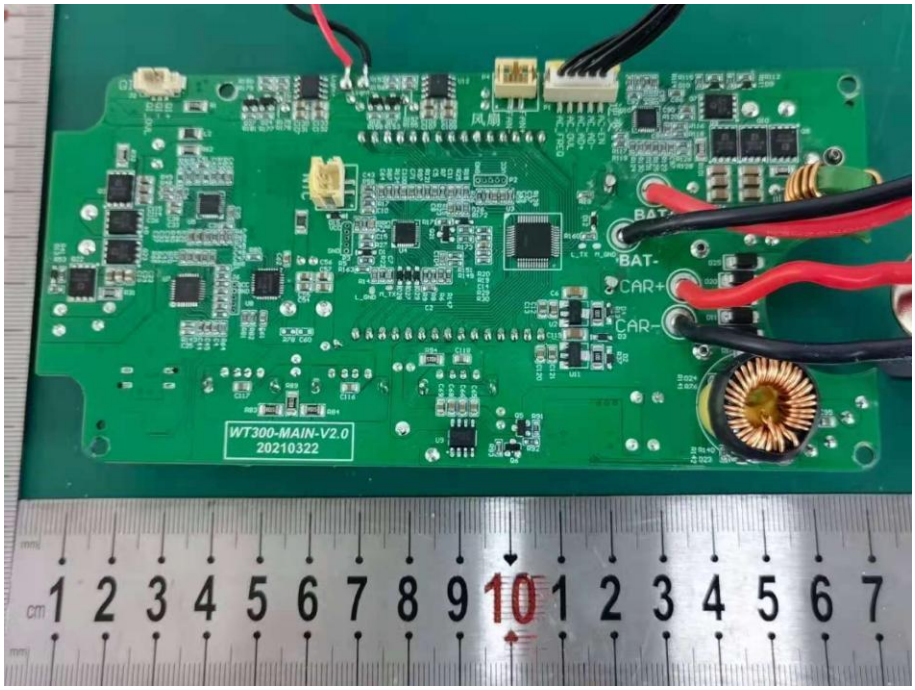


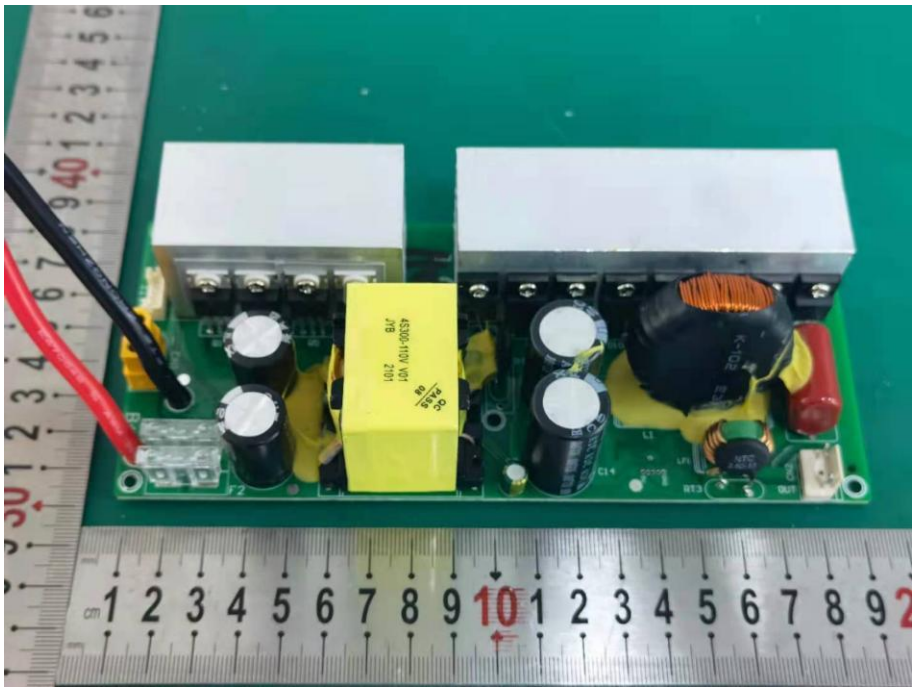

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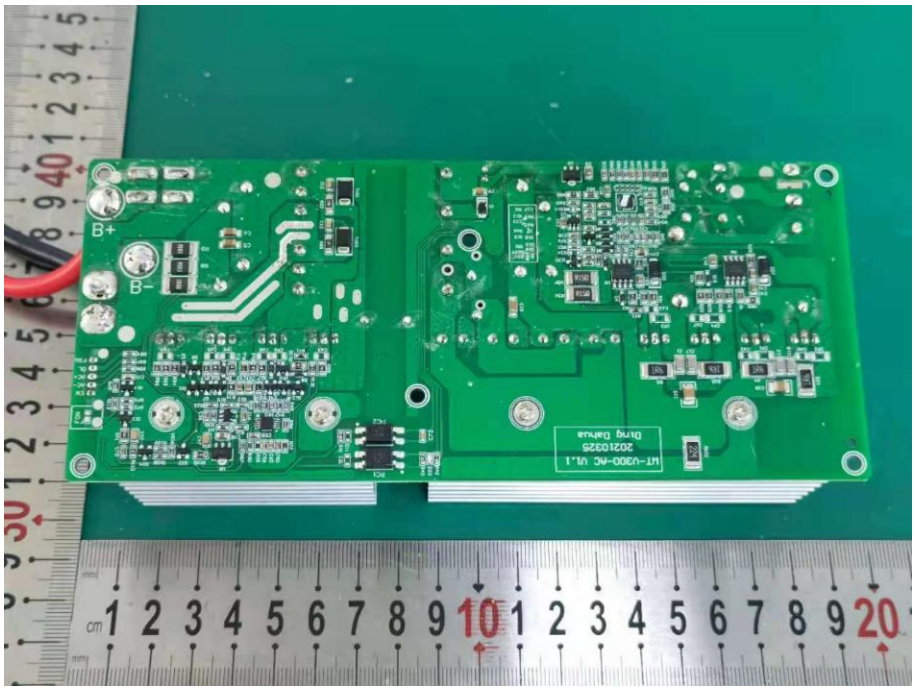


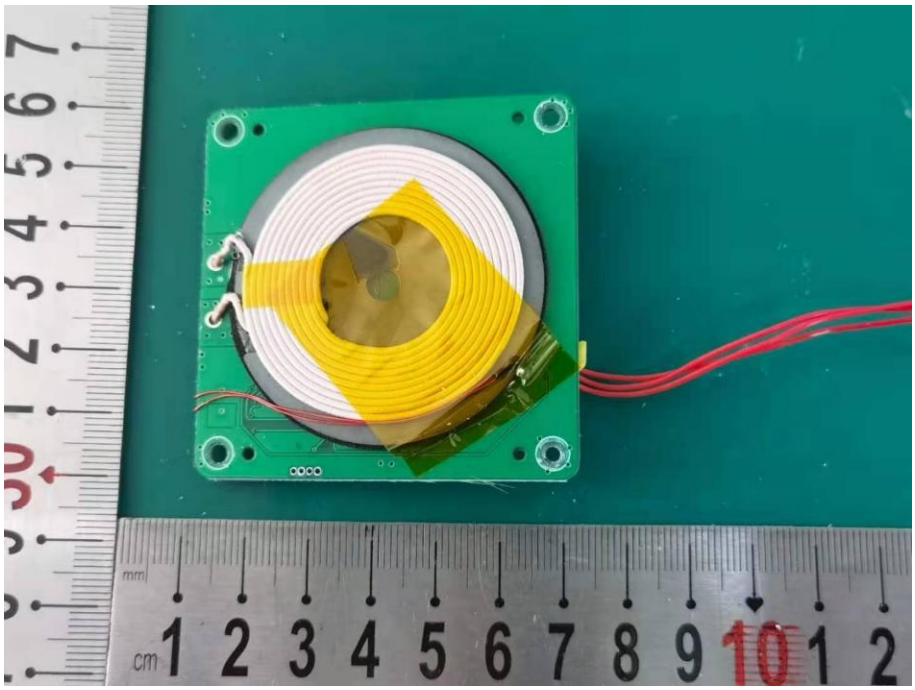

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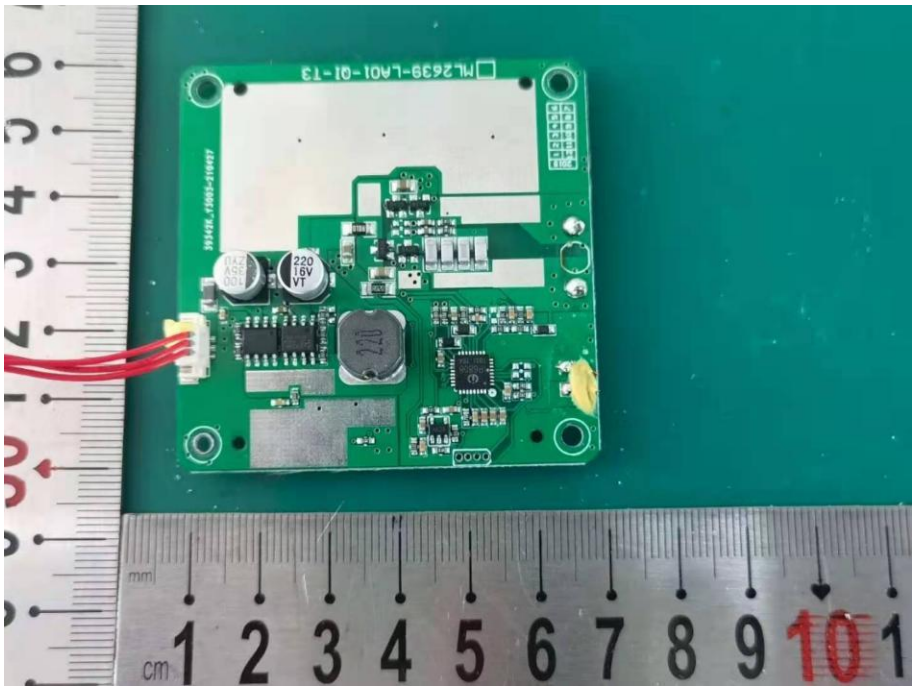
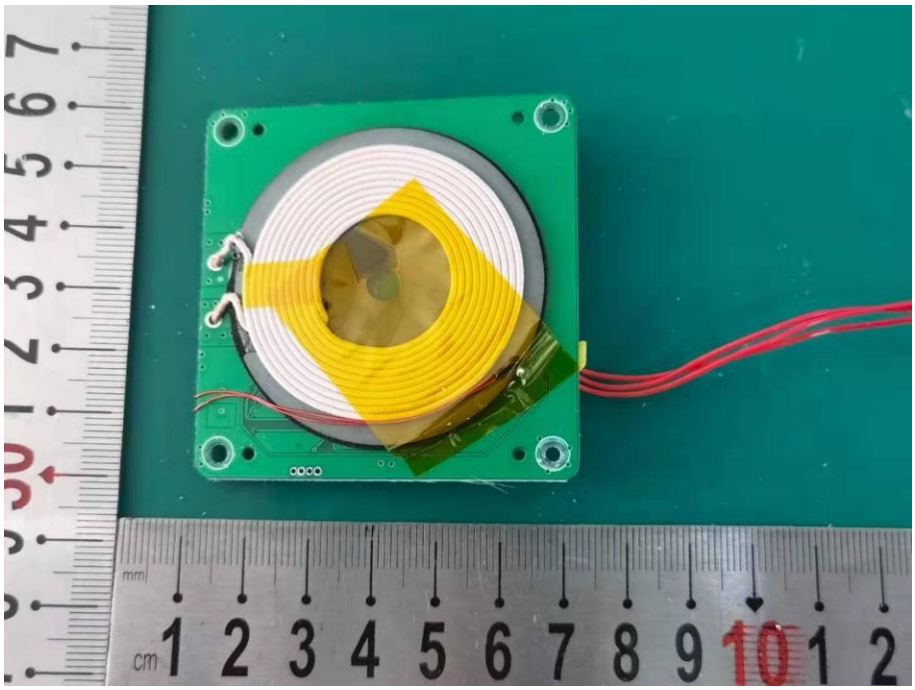
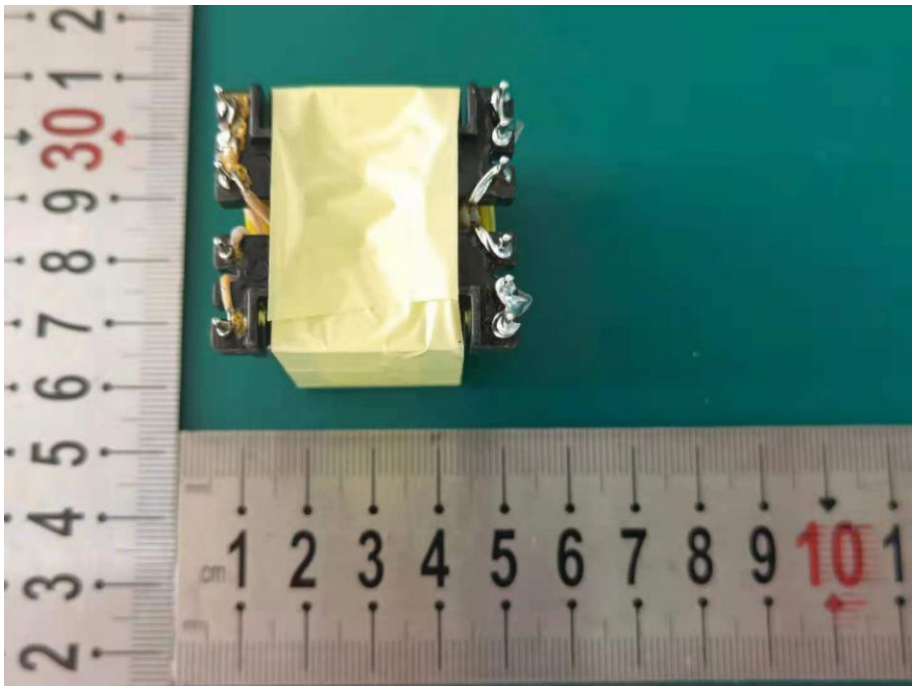


# TEST REPORT

**Photo of Transformer:**

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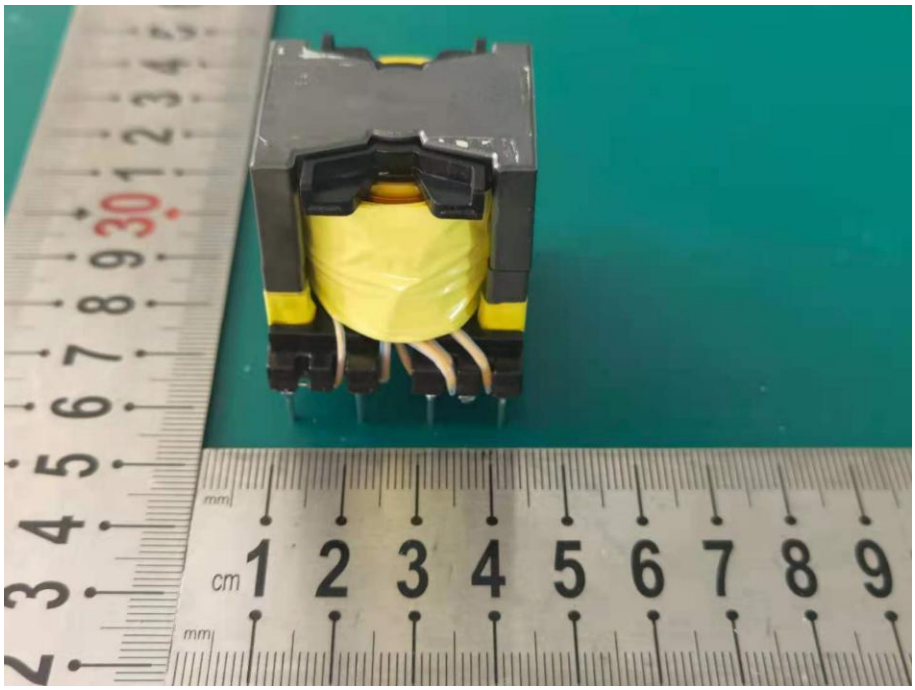


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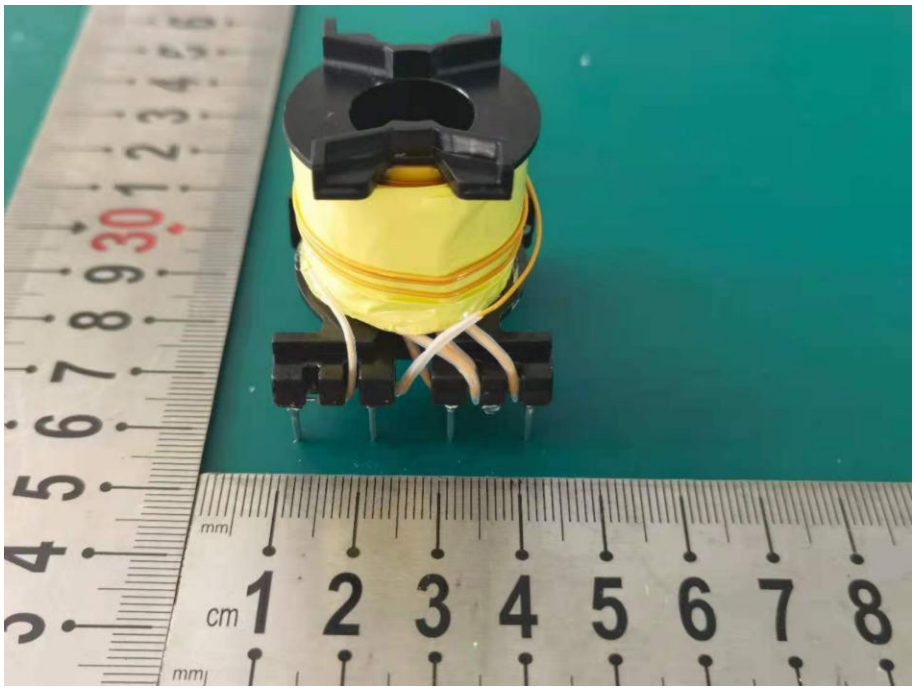


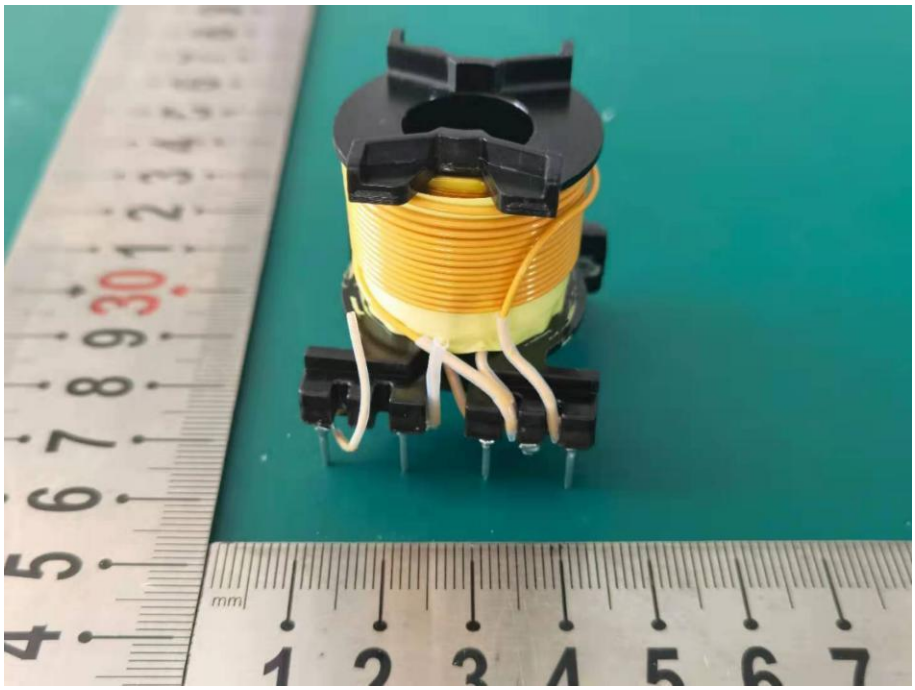

# TEST REPORT

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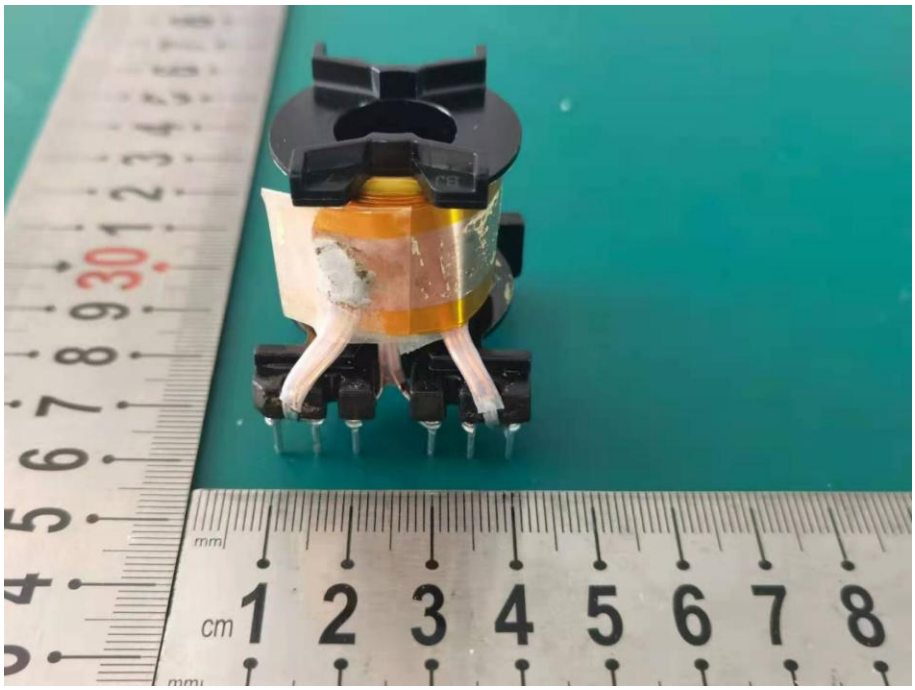
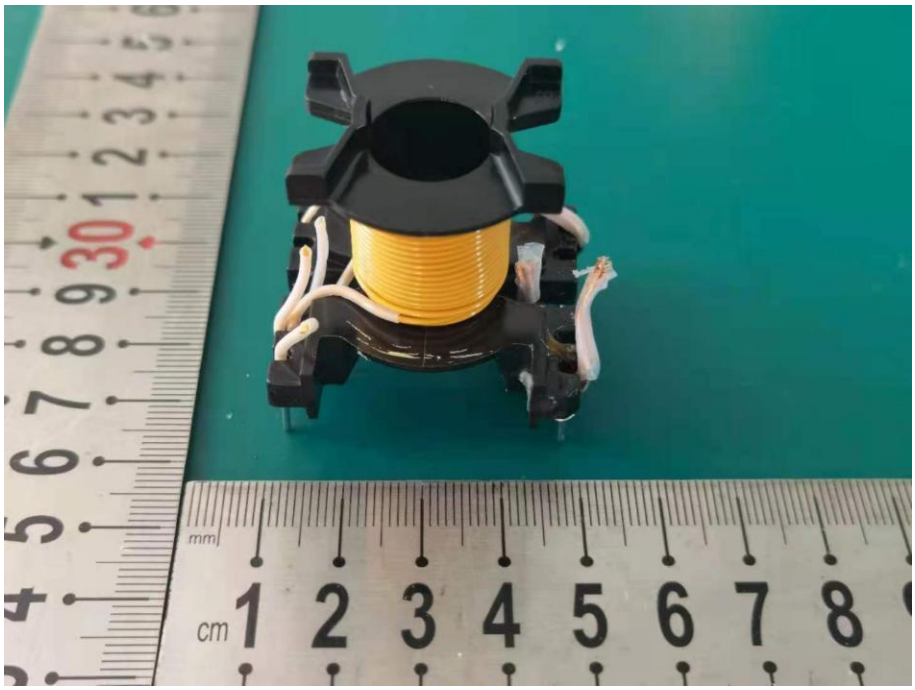
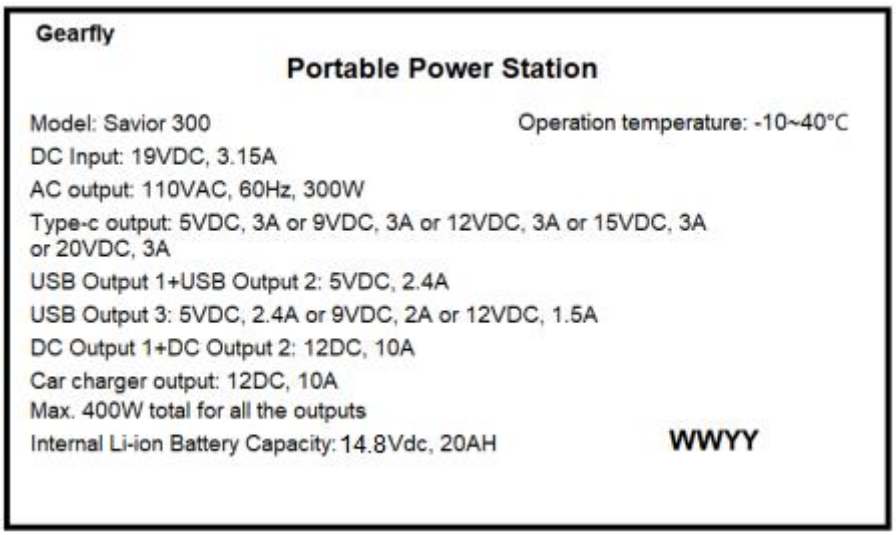
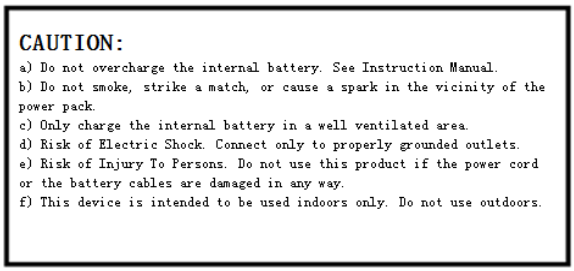


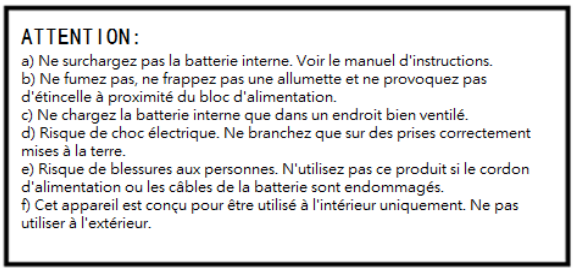



# TEST REPORT

**Marking:**



# TEST REPORT

**Safety user manual:**

IMPORTANT SAFETY INSTRUCTIONS

WARNING – When using this product, basic precautions should always be followed, including the following:

a) Read all the instructions before using the product.

b) To reduce the risk of injury, close supervision is necessary when the product is used near children.

c) Do not put fingers or hands into the product.

d) Use of an attachment not recommended or sold by power pack manufacturer may result in a risk of fire, electric shock, or injury to persons.

e) To reduce risk of damage to the electric plug and cord, pull the plug rather than the cord when disconnecting the power pack.

f) Do not use a battery pack or appliance that is damaged or modified. Damaged or modified batteries may exhibit unpredictable behavior resulting in fire, explosion or risk of injury.

g) Do not operate the power pack with a damaged cord or plug, or a damaged output cable.

h) Do not disassemble the power pack, take it to a qualified service person when service or repair is required. Incorrect reassembly may result in a risk of fire or electric shock.

i) To reduce the risk of electric shock, unplug the power pack form the outlet before attempting any instructed servicing.

j) WARNING – RISK OF EXPLOSIVE GASES.

1) WORKING IN VICINITY OF A LEAD ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF THE UTMOST IMPORTANCE THAT YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE POWER PACK.

2) To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of the battery. Review cautionary marking on these products and on engine.

k) PERSONAL PRECAUTIONS

l) When charging the internal battery, work in a well ventilated area and do not restrict ventilation in any way.

m) Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.

n) Do not expose a power pack to fire or excessive temperature. Exposure to fire or temperature above 130°C may cause explosion.

o) Have servicing performed by a qualified repair person using only identical replacement parts. This will ensure that the safety of the product is maintained.

SAVE THESE INSTRUCTIONS

End of test report