

TEST REPORT UL 2056 Outlet of Investigation for Safety of Power Banks	
Date of issue	Jan. 20, 2025
Total number of pages.....	25 pages
Test item description	Power Bank
Model/Type reference	955565
Ratings	Input: DC 5V/2.1A Output1: 5V/2.1A Output2: 5V/2.1A Battery: 5000mAh, 3.7V 18.5Wh
Test specification:	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):	
☒ Testing Laboratory:	
Tested by (name, function, signature)	Sunny Li 
Approved by (name, function, signature)....	Jason Zhan 



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Test item particulars:

Information about the product needed to establish a correct test program, such as product mobility, type of power connections and similar. (Test item particulars are selected by the TRF Originator base on the requirements in the standard)

Designation..... : 955565
Trade mark..... : comfheat
Input rating..... : 5V/2.1A
Output rating..... : Output1: 5V/2.1A
Output2: 5V/2.1A
Rated capacity..... : 5000mAh
Output capacity..... : 5000mAh
Maximum input rating..... : 5V/2.1A
Output1: 5V/2.1A
Maximum output rating..... : Output2: 5V/2.1A
Work Temperature..... : Charge 0~45°C; Discharge -20~60°C

..... 2.1A, until charge current
..... 2.1A, until 0% is off.

Sample numbe : 01#~27#

Possible test case verdicts:

Test case does not apply to the test object..... : N(/A)

Test object does meet the requirement..... : P(ass)

Test object does not meet the requirement..... : F(ail)

Testing:

Date of receipt of test item..... : Jan. 13, 2025

Date(s) of performance of tests..... Jan. 13, 2025 to Jan. 19, 2025

General remarks:

This report shall not be reproduced, except in full, without the written approval of the testing laboratory.

The test results presented in this report relate only to the object tested.

"(see remark #)" refers to a remark appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

Copy of marking plate:

Product Name	:	Power Bank
Model	:	955565
specifications	:	Input: DC 5V/2.1A Output1: 5V/2.1A Output2: 5V/2.1A Battery: 5000mAh, 3.7V 18.5Wh
	:	Wuhanxilianpingxinxikeyijyouxiangongsi
	:	Jinyinhumachilubei, huanhuludong, yinhushuixie24dong2danyuan2ceng1shi, Wuhan Hubei, 430048
     		

Note(s):

The above label is a draft of an artwork for marking plate pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval.

Summary of testing:

cl.6.2 Electrical insulation;

cl.6.7 Housings;

cl.7.2.1 Rated capacity;

cl.7.2.2 Specified operating region and temperature tests;

cl.7.2.4 Vibration and mechanical shock;

cl.7.3.1 External short-circuit and overload;

cl.7.3.2 Overcharge.

General information:
Description of the product:

low voltage electronic devices.

(Certificate No.: /), see component list table for details.

The Power bank mainly composed of:

- Circuit Module

- Plastic Enclosure

Power bank electrical parameter:

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
955565	5000mAh	5V	2.1A	2.1A	2.1A	2.1A	4.2V	-

Model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Discharge Current	Maximum Charge Voltage	Cut-off Voltage
955565	5000mAh	3.7V	1000mA	1000mA	2500mA	2500mA	4.2V	2.75V

Construction:N/A

Circuit diagram:N/A

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Clause	Requirement + Test	Result - Remark	Verdict

6	Construction		P
6.1	General		P
	Power banks shall be so designed and constructed so as to reduce the risk of fire, electric shock or injury hazards. Compliance is checked by the requirements of 6.2 to 6.8.	Complied.	P
	For removeable power banks integrated into luggage, carrying cases, bags, packs, etc., the power bank shall also be designed and constructed to allow for installation and removal from the luggage, carrying case, bag, pack, etc. without the use of a tool and without damaging the power bank. Appropriate means of securing the power bank shall be provided in the luggage, carrying case, bag, pack, etc. without damaging the power bank or interfering with the safe operation of the power bank.	Not such construction.	N/A
6.2	Electrical insulation		P
	Electrical insulation shall withstand the electrical stress likely to occur during intended use.		N/A
	Compliance is checked by the following tests:		N/A
	The insulation resistance of a power bank electrical housing shall not be less than 5 MΩ when measured 60 s after application of DC voltage of approximately 500 V applied between any terminal and		N/A
		Plastic enclosure.	N/A
			N/A
	The insulation shall withstand without breakdown an AC voltage having a frequency of 50 Hz or 60 Hz or DC voltage applied between current carrying parts and accessible parts, non-metallic parts being covered with metal foil. The values of the test voltages are specified in Table 6.1.	The insulation withstand without breakdown an AC voltage.	P
	The insulation voltage rating of cable(s) supplied with the power bank and of internal wiring shall not be less than 60 V as evidenced by a marking on the specification.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Electrical insulation shall not exceed its marked temperature rating or, if not marked, the Relative Thermal Index (RTI) for the material in question. Compliance is checked by the test of 7.2.2.	RTI: 105°C	P
6.3	Electrical conductors		P
	Wires within a power bank housing, or those integral with luggage, carrying cases, etc., and not in a low power circuit shall be protected so that they [REDACTED] which may cause damage to their insulation.	Complied.	P
	A low power circuit is considered to be points closest to the battery or any power input source at which the maximum power delivered to an adjustable resistor, connected between the point to be investigated and the opposite pole of the battery or power input source, does not exceed 15 W at the end of 5 s. The part of the circuit farther from the battery or power input source than a low-power point is considered to be a low-power circuit.	Low power circuit.	P
	Wireways shall be smooth and free from sharp edges		P
	Holes in metal through which insulated wires pass shall have smooth well-rounded surfaces or be provided with bushings.	No such part.	N/A
	[REDACTED]	No such part.	N/A
	Bare internal wiring or other current-carrying parts shall be rigid and fixed so that, in normal use, electrical short-circuit is unlikely to occur. Except for integral traces of a printed circuit or [REDACTED] compliance is checked by the following test:	No such part.	N/A
	Bare current carrying parts are subjected to a steady force of 10 N $\pm$ 1 N, applied by the test probe 11 of IEC 61032. Such parts shall not come loose, [REDACTED] conductive parts after application of the force.	No such part.	N/A
6.4	Internal electrical connections		P
	The mechanical integrity of internal electrical connections shall be sufficient to accommodate conditions of intended use.		P
	Solder alone is not considered a reliable means of connection.	Not solder alone.	P
	Screws used for electrical connections shall screw into metal.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Screws and nuts that make a mechanical connection between different parts of a power bank shall be secured against loosening if they also make electrical connections. Compliance is checked by inspection and manual test.		P
6.5	External electrical connections		P
	External electrical connectors shall comply with the physical specification for one of the types of USB connectors (USB types A, B, micro A, micro B, or C) as described in the IEC 62680 series of standards.	Complied	P
6.6	Terminal contacts and other electrical connections		P
	Terminal contacts and other electrical connections shall be arranged so as to minimize the risk of shortcircuits, such as using keyed connectors. Compliance is checked by inspection, and if necessary, by applying a steady force of 10 ± 1 N, by the test probe 11 of IEC 61032.	Complied.	P
6.7	Housings		P
	The housing of a power bank shall have adequate mechanical strength and be constructed to provide electronic circuits. It shall additionally withstand such rough handling that may be expected in normal use without exposing sharp edges of broken glass or otherwise impairing compliance with the requirements of this outline of investigation.	Complied.	P
	The housing shall not be capable of being opened by simple tools, such as a screwdriver. It shall be ultrasonically welded, secured by single use or tamper-proof screws, or secured by adhesives complying with the adhesive requirements of UL 746C. Compliance is checked by inspection and the tests of 7.2.4 and as follows.	Plastic enclosure rated V-0 used. Plastic enclosure used tamper-proof screws.	P
	Each of five fully charged power banks is dropped three times from a height of 1.0 m onto a flat surface so as to obtain impacts in random orientations. Each sample is then placed on a flat horizontal surface for a minimum of 1 h.	Tested complied.	P
	If the power bank is still operational, one charge and discharge cycle is conducted on the operational sample in accordance with the method declared by	Operational normally.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	The power bank housing and any internal compartments for the cells shall be designed to [REDACTED]	Complied.	P
	The non-metallic housing of a power bank shall be resistant to heat. Compliance is checked by inspection, and for polymeric materials, the following test.	Complied.	P
	Fully charged power banks are placed for 7 h in an air circulating oven at a temperature of $+70^{\circ}\text{C} \pm 2^{\circ}\text{C}$, according to the procedure in 7.1. After conditioning, the samples are removed from the [REDACTED] when the housings are examined for evidence of distortion, separation of sections or openings that impair compliance with this outline of investigation.	Tested complied.	P
	The non-metallic housing of a power bank shall be resistant to fire. Compliance is checked by the 20 mm (3/4 inch) Flame Test in UL 746C.	Plastic enclosure rated V-0 used.	N/A
	The 20 mm (3/4 inch) Flame Test is not carried out if the housing is comprised of material classified for flammability as minimum V-1 according to UL 94.		N/A
6.8	Temperature/voltage/current management		P
	[REDACTED] the temperature, voltage and current limits as [REDACTED] 9555651 has been approved [REDACTED] operating region (lithium ion systems) or UL 1642, or the operating region requirements and examples in the Annex for Charging and Discharging Range of Secondary Lithium Ion Cells for Safe Use of UL 62133-2.		P
	Batteries shall have an independent control and protection for current, voltage, temperature and any other parameter required for safety and shall maintain the cells within their operating region.	Complied.	P
	Batteries designed for the selective discharge of a portion of their series connected cells shall incorporate circuitry to prevent operation of cells [REDACTED] Compliance is checked by reviewing the protection circuit module (PCM) of the battery and the test of 7.2.2.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	exceed the upper limit of the charging voltage where the portable electronic devices or similar devices have the equivalent function.		P
	The protection circuit module shall function, under intended use conditions of charging and discharging, as follows:	Complied.	P
	exceed the upper limit of the charging voltage stopped before the upper limit of the charging voltage is exceeded;		P
			P
	– For batteries consisting of series-connected cells •closely matched capacities; •the same design; •the same chemistry; and	1S1P	P
	-For the battery consisting of series-connected cells	1S1P	P
	-For power banks with an integral photovoltaic (PV) feature, charge control shall be incorporated such that battery backfeed to the PV circuit components is prevented. Compliance is checked by reviewing the protection circuit module (PCM) of battery, and by the test of 7.2.2.	No photovoltaic (PV) feature.	N/A
	The power bank shall not exhibit a risk of fire, electric shock or mechanical hazard when subjected to foreseeable misuse conditions. Compliance is checked by the test of 7.3.	Complied.	P
	Electronic circuits shall be designed and applied so that a fault condition will not render the power bank unsafe with regard to electric shock, fire hazard, or mechanical hazard.	Complied.	P
	If a thermal cutout functions to interrupt charging or discharging, or if its functioning is necessary for the power bank to comply with the requirements of 7.3, the thermal cutout shall comply with UL 60730-1.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Electronic circuits are checked by evaluation of the fault conditions that are likely to occur and result in electric shock, fire hazard, or mechanical hazard, such as short circuit or open circuit of MOSFET (metal oxide semiconductor field-effect transistor), fuse, thermostat or positive temperature coefficient (PTC) thermistor.	Complied.	P
7	Performance		P
7.1	General		P
	Some lithium batteries are capable of exploding when the tests described in this outline of investigation are conducted. It is important that personnel be protected from the flying fragments, explosive force, sudden release of heat, and noise that results from such explosions. The test area shall be well ventilated to protect personnel from possible harmful fumes or gases.	Complied.	P
	Unless otherwise specified, tests are carried out use in an ambient temperature of $20 \pm 5^\circ\text{C}$. at temperatures outside the range of $10 - 40^\circ\text{C}$, the ambient temperature for testing is as follows:	Charging temperature range $10 - 45^\circ\text{C}$. Test carried out at $\pm 5^\circ\text{C}$.	P
	-If the battery is recommended to be charged at a minimum ambient temperature lower than 10°C , the test is also conducted at that minimum temperature $+0/-5^\circ\text{C}$;		P
	-If the battery is recommended to be charged at a maximum ambient temperature greater than 40°C , the test is also conducted at that maximum temperature $+0/-5^\circ\text{C}$.		P
	Unless otherwise specified, samples of power banks shall be fully discharged and then charged in prior to any testing. The sequence shall be repeated at least two hours after the battery was charged.	Complied.	P
			P
	The discharging procedure is to discharge the power bank at a steady rate of current to attain the end of discharge condition specified by the power		P
7.2	Operating conditions		P
7.2.1	Rated capacity	Tested complied.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	The capacity of power bank shall not be less than 90% or exceed 110% of the marked capacity rating. Compliance is checked by the following test:	The capacity of power bank not less than 90% or exceed 110% of the marked capacity rating.	P
	A sample of a fully charged power bank is stored for not less than 1 h and not more than 4 h.		P
	The power bank is then discharged, at a constant current equal to the rated current of the output port, until its voltage reaches to the end-of-discharge voltage of the output port specified by the		P
	The test may be repeated up to 4 additional times, as necessary to satisfy this requirement.		P
7.2.2	Specified operating region and temperature tests	Tested complied.	P
	Power banks shall operate within the specified operating region of the batteries / cells. For each		P
	-The upper limit of charging voltage:	5V	P
	-The upper limit of charging current:	2.1A	P
	-The surface temperature:	45°C	P
			P
	-Charging and discharging while placed in the most unfavorable stable position on a softwood surface and covered by two plies of loosely draped cheesecloth that overlap the supporting surface by minimum 25 mm in each direction.	Tested as required.	P
	-Charging while placed in associated luggage, carrying case, etc. according to the luggage	Not such part.	N/A
	•with no electrical load; and		N/A
	•with all electrical loads of the associated luggage connected, or a portion of the electrical loads if such a condition represents a worse case.		N/A
	During charging and discharging, the voltage, the temperature and the charging current are monitored for all individual cells. Currents measured during battery charging shall be the average current over a period of between one and five seconds.	Tested as required.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	measurements shall be on the outer surface, near	Tested as required.	P
	For batteries where the cells are configured in series, the test shall be repeated with the charge in one battery deliberately imbalanced. The imbalance is introduced by having all cells with the exception condition to the specified fully discharged condition. approximately 50% of its specified state of charge (SOC).	1S1P	P
	The measured temperatures shall not exceed the values in Table 7.1.		P
	External touchable surfaces of power banks shall not present a risk of thermal burn injury. Compliance is checked by determining the temperature rise of touchable surfaces during two full discharge – charge cycles under the following conditions:		P
	-Charging and discharging while placed on a softwood surface.		P
	During charging and discharging, the measured temperatures shall not exceed the values in Table 7.2.		P
7.2.3	Limited power source	Tested complied.	P
	The output available from any port shall comply with 7.3 or Table 7.4. Compliance is checked by the following test:		P
	The open circuit output voltage and short-circuit output current from a fully charged power bank shall be measured. If more than one port is provided, the output from each port shall be measured one at a time with the others unloaded.		P
	if complying with one or the following:		P
	Table 7.3;		P
	-A linear or non-linear impedance limits the output in compliance with Table 7.3. If a positive temperature coefficient (PTC) device is relied upon, it shall:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	be tested in accordance with UL 60730-1. 15. Endurance tests of Clause 17, additional [REDACTED] and additional Endurance tests of Clause J.17; or		P
	meet the requirements in UL 60730-1 for a device for Type 2.AL action;		N/A
	-A regulating network or an integrated circuit (IC) current limiter, limits the output in compliance with Table 7.3, both with and without a simulated single fault in the regulating network or the IC current limiter (open circuit or short circuit). A single fault between the input and output is not conducted if the IC current limiter meets a suitable test program as given in the Annex for Integrated Circuit (IC) Current Limiters of UL 60950-1 or the Clause for Integrated Circuit (IC) Current Limiters of UL 62368-1;		N/A
	-An overcurrent protective device is used and the [REDACTED]		N/A
	Where an overcurrent protective device is used, it shall be a fuse or a non-adjustable, non-auto-reset, electromechanical device.		N/A
7.2.4	Vibration and mechanical shock	Tested complied.	P
	Vibration and mechanical shock encountered during transportation and use shall not cause fire, explosion, rupture, leakage or venting. Compliance is checked by the following tests:		P
	Three fully charged power bank samples are firmly secured to the platform of a vibration machine without distorting them in such a manner as to faithfully transmit the vibration. Each sample is then subjected to sinusoidal vibration sweep cycle according to the conditions of Table 7.5. The sweep cycle shall be repeated 11 additional times for each of three mutually perpendicular mounting positions. One of the directions shall be perpendicular to the power bank face with the most ports or where an adjustable control is located.	Tested as required.	P
	Three additional fully charged power banks are firmly secured to a shock testing machine by means [REDACTED] support the test sample. Each sample is subjected to 3 shocks in each direction of three mutually perpendicular mounting positions of the sample for a total of 18 shocks. For each shock, the parameters given in Table 7.6 shall be applied.	Tested as required.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	After the aforementioned tests, if the power bank is still operational, one charge and discharge cycle is conducted on each operational sample using the method declared by manufacturer.	The power bank is still operational.	P
7.3	Abnormal operation		P
7.3.1	External short-circuit and overload	Tested complied.	P
	Short-circuiting of positive and negative terminals of the power bank shall not cause fire or explosion from the power bank or ignite the external fire indicators. Compliance is checked by the following tests:		P
	Two samples of a fully charged power bank are short-circuited for a period of 24 h by connecting the positive and negative terminals of a port with a total external resistance of $80 \pm 20 \text{ m}\Omega$. If the enclosure temperature of power bank declines by 20% of the maximum temperature rise measured after the h if no charging period is specified, the test may terminated sooner. However, in case of a rapid decline in the short-circuit current, the power bank shall remain on test for an additional one hour after the current reaches a low-end steady state condition.	Tested as required.	P
	The test is repeated on two additional samples after a fault is introduced in the discharge protection circuit. The faults of 6.8 shall be applied, one at a time and as appropriate.		P
	Two additional samples are placed on a softwood surface covered by a single layer of white tissue paper. Each power output port is then simultaneously loaded to continuously draw a maximum attainable current for at least 1 h. If a protective circuit operates to limit the current from one or more simultaneously loaded ports, the test is repeated on two additional samples after a fault is introduced in the protection circuit. The faults of 6.8 shall be applied, one at a time and as appropriate.		P
	After the aforementioned tests, if the power bank is still operational, one charge and discharge cycle shall be conducted for each operational sample		P

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Clause	Requirement + Test	Result - Remark	Verdict
	For a power bank integrated in luggage, a nominal 1 m length of USB cable, having 0.3211 mm diameter conductors and mating connector, shall be attached to one sample of the power bank port providing the maximum output current. The cable shall have a short circuit made by any convenient means at approximately its mid-point and shall then be placed on a softwood surface that is covered by a single layer of white tissue paper and the cable draped with a single layer of cheesecloth. The test is conducted until ultimate results are observed.		N/A
7.3.2	Overcharge	Tested complied.	P
	A power bank shall tolerate without fire or explosion [REDACTED] Compliance is checked by the following test:		P
	Two power bank samples are discharged to fully discharged state. They are then charged at a constant current of 2.0 It A, using a steady supply voltage which is:		P
	[REDACTED] construction; or		P
	[REDACTED]		N/A
	NOTE The DC-DC converter circuitry of power bank will need to be bypassed in order to make it possible to apply the specified overcharge.	USB(+) to Battery(+) was bypassed.	P
	The test shall continue until the temperature of the housing reaches steady state or peaks and returns to ambient.		P
	The test is repeated on two additional samples after a fault is introduced in the charge protection circuit. The faults of 6.8 shall be applied, one at a time and as appropriate.		P
	For a power bank with a series configuration battery, an additional sample shall be prepared such that all cells are at approximately 50% charge, except for one which is shorted. The battery is then charged.	1S1P	P
	After the aforementioned tests, if the power bank is still operational, one charge and discharge cycle is conducted on each operational sample using the method declared by manufacturer.		P
8	Markings		P
8.1	Electrical rating marking		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The following electrical rating shall be permanently and legibly marked on the power bank:	Complied. See label on page 3.	P
	-Input rating in Vdc or Vac and A for each port;		P
	-Output rating in Vdc and A for each port and a combined ampere rating (if not equal to the summation of all ports);		P
	-Electrical capacity in Ah or mAh of the power bank. A capacity rating shall additionally be specified for each port if it is not equal to the rating of the power bank.		P
8.2	Identification marking		P
	The following marking shall be permanently and legibly marked on the power bank:	Complied. See label on page 3.	P
			P
			P
	-Date of manufacture (which may be in code).		P
8.3	Cautionary marking		P
	The following or equivalent wording shall be permanently and legibly marked on the power bank: "CAUTION: Risk of Fire and Burns. Do Not Open, _____ (maximum temperature) or Incinerate. Follow _____"	Complied. See label on page 3.	P
	This wording or equivalent shall also be included in the instructions supplied with the power bank.		P
	For removeable power banks integrated into luggage, carrying cases, bags, packs, etc., the following or equivalent shall be permanently and legibly marked on the power bank and the luggage, carrying cases, bags, packs, etc.: "For use only with _____"	No such part.	N/A
			N/A
8.4	Other information		P
			P
9	Instructions		P
9.1	General		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The following instructions shall be supplied with the power bank in the form of a manual, stuffer sheet or on packaging. The instructions may additionally be repeated via marking provided directly on the power bank. See also Annex A.		P
	-Storage and disposal instructions; and		P
	-Recommended charging instructions.		P
	For removeable power banks integrated into luggage, carrying cases, bags, packs, etc., the following instructions shall also be supplied in the form of a manual, stuffer sheet. These instructions may additionally be repeated via marking provided directly on the power bank and/or the luggage, carrying case, bag, pack etc.:	No such part.	N/A
	-Installation and removal instructions, including when storing the luggage, carrying case, bag, pack, etc. in a cargo area of an airplane;		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

TABLE: Critical components information					P
		Type/model	Technical data	Standard	Mark(s) of conformity
Lithium-ion battery	HH	955565	3.7V, 5000mAh	UL 1642	UL
PCB	Interchangeable	Interchangeable	V-0, 130° C	UL 796	UL
Internal Wire (red, black)	Interchangeable	Interchangeable	MIN 22AWG MAX 200°C min300VAC	UL 758	UL
Plastic Enclosure	Interchangeable	Interchangeable	V-0 Min thickness: 0.75mm T max :60°C	UL746 UL94	UL

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Clause	Requirement + Test	Result - Remark	Verdict
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Table 7.2.1	Rated capacity (Output: 5V,2.1A)					P
Ambient temperature: 23.8°C						
Rated capacity		5000mAh		90%~110% capacity		4580mAh~5820mAh
Sample No.	Cycle No./ Measured Capacity					Results
	1#	2#	3#	4#	5#	
01#	4318.5mAh	4273.7mAh	4285.7mAh	4316.5mAh	4293.3mAh	P
Supplementary information: The capacity of power bank not less than 90% or exceed 110% of the marked capacity rating; Rated capacity: 6200mAh						

Table 7.2.2 a	Specified operating region and temperature tests (Normal test)					P	
Power Bank Component Temperature Test (Charge: 45°C, dishcharge: 45°C)							
Sample No.	02# (1 st cycle)		02# (2 nd cycle)		Limited T		
Testing Process	Charging (5V/2.1A)	Discharging (5V/2.1A)	Charging (5V/2.1A)	Discharging (5V/2.1A)	Charging	Discharging	
PCB (Battery protection board near U1)	69.3	75.9	61.5	72.9	130	130	
PCB (Battery protection board near U2)	65.2	73.6	57.9	68.9	130	130	
PCB (Battery protection board near U3)	47.7	51.3	44.6	52.3	130	130	
	32.4	37.6	34.8	35.7	Ref.	Ref.	
Ambient	24.3	24.4	24.7	24.5	--	--	
Supplementary information: Charging: 5V/2.1A; Discharge:5V/2.1A Temperature limits for touchable surfaces:Handles, knobs, grips, etc., and surfaces held for short periods of time or touched occasionally (> 10 s and < 1 min) *The ambient temperature is the actual test ambient temperature.							

Table 7.2.3						P
Circuit output tested: USB-A output						
Note: Measured Uoc (V) with all load circuits disconnected:						
Components	Sample No.	Uoc (V)	Isc (A)		VA	
			Meas.	Limit	Meas.	Limit
Normal condition (5V, 2.1A)	03#	4.75	2.96	8.0	14.06	100
SC-IC (U1)	04#	4.77	2.95	8.0	14.07	100
SC-IC (U2)	05#	4.75	2.94	8.0	13.97	100
SC-IC (U3)	06#	4.81	2.92	8.0	14.04	100

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Clause	Requirement + Test	Result - Remark	Verdict
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Supplementary information:
S-C=Short circuit

Table 7.2.4		Vibration and mechanical shock		P
Vibration test				
Sample no.	7#	8#	9#	
Mass (before test) (g)	98.7	98.6	98.7	
Mass (after test) (g)	98.7	98.6	98.7	
Mass loss ratio (%)	0.000	0.000	0.000	
Shock test				
Sample no.	10#	11#	12#	
Mass (before test) (g)	98.6	98.6	98.7	
Mass (after test) (g)	98.6	98.6	98.7	
Mass loss ratio (%)	0.000	0.000	0.000	
Supplementary information: No fire, explosion, rupture, leakage or venting.				

Table 7.3.1 a	External short-circuit					P
Sample No.	Test output	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature (°C)	Component single fault condition	Results
13#	USB-A	5.11	80	48.5°C	(Battery protection board IC U1) S-C	P
14#	USB-A	5.13	80	41.4°C	(Battery protection board IC U2) S-C	P
15#	USB-A	5.13	80	36.8°C	(Battery protection board IC U3) S-C	P
Supplementary information: No fire or explosion from the power bank or ignite the external fire indicators. Remark: S-C=short circuit						

Table 7.3.1 b	Overload test	P
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Clause	Requirement + Test			Result - Remark		Verdict
Sample No.	OCV before test (Vdc)	Test time (H)	Current drawn (A)	Maximum case temperature (°C)	Component single fault condition	Observation
16#	5.16	2.5	10	46.5	/	P
Supplementary information: No fire or explosion from the power bank or ignite the external fire indicators. Remark: S-C=short circuit						

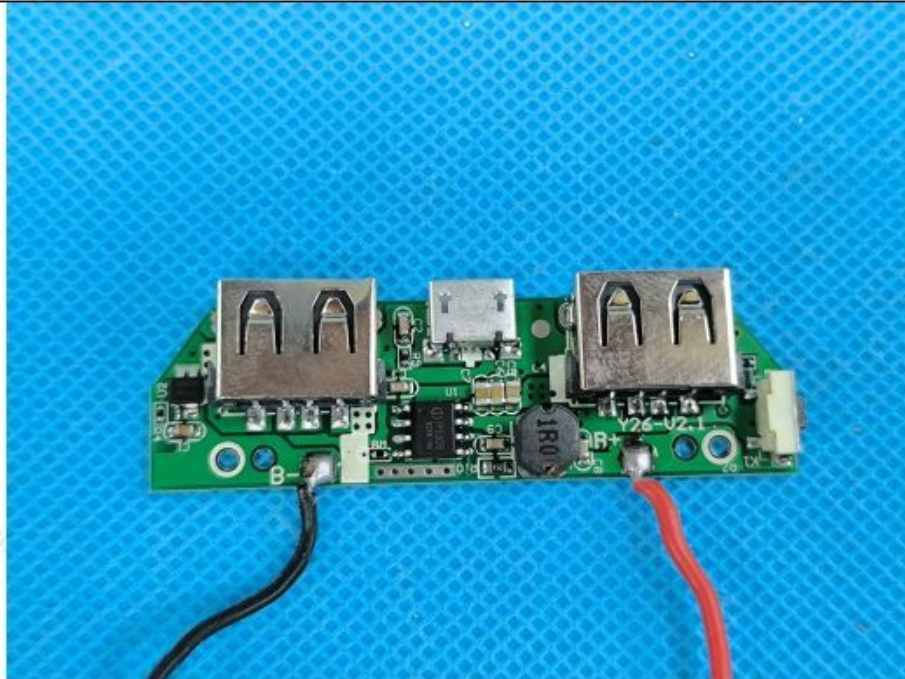
Table 7.3.2		Overcharge			P
Constant charging current (A) :				12.4	—
Supply voltage (Vdc) :				10.8	—
Sample no.	OCV before charging (Vdc)	Component single fault condition	Maximum outer case temperature (°C)	Results	
17#	5.16	(Battery protection board IC U1) S-C	39.5°C	P	
18#	5.14	(Battery protection board IC U2) S-C	38.6°C	P	
19#	4.18	(Battery protection board IC U3) S-C	65.6°C	P	
Supplementary information: No Fire or explosion. Remark: S-C=short circuit					

Sample photo









End of report