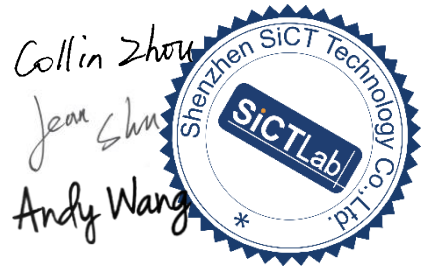


<h2 style="margin: 0;">TEST REPORT</h2> <h3 style="margin: 0;">UL 588</h3> <h3 style="margin: 0;">Standard for Seasonal and Holiday Decorative Products</h3>	
Job Number	XK2112012092S
Test by (print+signature)	Collin Zhou
Checked by (print+signature)	Jean Shu
Approved by (print+signature)	Andy Wang
Date of issue	December 11, 2021
Total number of pages	26 pages
Name of Testing Laboratory preparing the Report	Shenzhen SiCT Technology Co., Ltd. Room 402, 4/F., Building A, Yidehang Industrial Factory, Fukang Community, Longhua Street, Longhua District, Shenzhen, Guangdong, China
Applicant's name	Shenzhen LinkedSparx Technology Co., Ltd
Address	606, No. 82, 4th Industrial Park, Tantou Community, Songgang Sub-district, Bao'an District, Shenzhen
Manufacturer's name	LinkedSparx
Address	606, No. 82, 4th Industrial Park, Tantou Community, Songgang Sub-district, Bao'an District, Shenzhen
Test specification:	
Standard	UL 588:2015 Ed.19+R:15Sep2017
Test procedure	Type test
Non-standard test method	N/A
Test Report Form No.	UL588_2018
Test Report Form(s) Originator	SiCT
Master TRF	Dated 2018-10
Test item description	LED String Lights
Trade Mark	LinkedSparx
Model/Type reference	LS-S300-2A, LS-S210-2A, LS-S420-2A, LS-S210-2B, LS-S300-2B, LS-S420-2B, LS-S210-2C, LS-S300-2C, LS-S420-2C, LS-S210-2D, LS-S300-2D, LS-S420-2D, LS-S01-1A, LS-S02-1A, LS-S03-1A, LS-S01-1B, LS-S02-1B, LS-S03-1B, LS-S01-1C, LS-S02-1C, LS-S03-1C, LS-S01-1D, LS-S02-1D, LS-S03-1D
Ratings	Input: DC24V, 1A



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)

Testing.....:

Date of receipt of test item: December 07, 2021

Date (s) of performance of tests: December 07, 2021 to December 11, 2021

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.

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

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

General product information:

The product covered in this report is a LED String Lights, it powered by DC24V from an ETL approved AC Adapter.

Relevant Technical consideration:

-Mass of equipment (kg): 657g Max

The model LS-S300-2A was selected as representative model and all the test were performed on it. And found to comply with the standard was subjected to all the tests. All the models are identical except the model name and appearance is different.

Copy of marking plate (Representative):**Marking label of LED String Lights****Marking label of AC Adapter**

Notes:

1. The marking label would silk-screened or stamped on the product.
2. The model name can be replaced by other models in this report.

Test Item:

SEASONAL AND HOLIDAY DECORATIVE PRODUCTS**[UL 588:2015 Ed.19+R:15Sep2017]**

Test Required		Clause/ Section	Performance Test	Test Verdict	
Yes	N/A		Test Item Description	Pass	Fail
<input checked="" type="checkbox"/>	<input type="checkbox"/>	40	LEAKAGE CURRENT TEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	41	LEAKAGE CURRENT FOLLOWING HUMIDITY CONDITIONING	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	42	INPUT TEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	43	TEMPERATURE TEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	44	MOUNTING POSITION TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	45	DIELECTRIC VOLTAGE-WITHSTAND TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	46	STRAIN RELIEF TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	47	WIRE PUSH-BACK RELIEF TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	48	ABNORMAL OPERATION TEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	49	COMPONENT POWER MEASUREMENT TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	50	DOWNWARD BURNING RATE TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	51	CONDUCTIVITY OF DECORATIVE PARTS TEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	52	ROUTINE FLEXING TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	53	SLIP-RING ENDURANCE TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	55	ABNORMAL TESTS FOR CONTROLLERS	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	58	ENCLOSURE MOLD STRESS RELIEF TEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	59	DROP TEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	60	IMPACT TEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	61	COLD IMPACT TEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	62	RESISTANCE TO CRUSHING TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	63	ADHESIVE TEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	68	FUSEHOLDER CRUSH TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	69	FUSEHOLDER COVER TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	71	STRAIN RELIEF TEST FOR WIRING DEVICES	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	72	RELIABILITY OF CONDUCTOR CONNECTION TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	75	INSULATION SECURENESS TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	78	OVEN TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	79	LAMPHOLDER STRAIN RELIEF TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	80	SECURENESS OF LAMPHOLDER CONTACTS TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	81	LAMPHOLDER MILLIVOLT DROP TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	82	ROPE STRENGTH TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	83	CRUSH TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	84	CASCADE LAMP BURNOUT SIMULATION TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	85	CASCADE LAMP TEMPERATURE TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	86	CYCLING TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	87	INPUT TEST	<input type="checkbox"/>	<input type="checkbox"/>

<input type="checkbox"/>	<input checked="" type="checkbox"/>	89	RAIN TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	90	RAIN TEST FOR SERIES-CONNECTED LIGHTING STRINGS	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	91	STANDING WATER IMMERSION TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	92	GASKET ADHESION TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	95	FLEXING TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	96	DECORATIVE LIGHTING STRING INTENDED FOR USE ON A PATIO UMBRELLA	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	97	TEMPERATURE AFTER FLEXING TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	99	STABILITY TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SD8	STRAIN RELIEF TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SD9	FLEXING TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SD10	CONDITIONING TEST PRIOR TO RAIN TEST	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SD11	ABNORMAL OPERATION TEST	<input type="checkbox"/>	<input type="checkbox"/>

General Note:

- When a test instrument has multiple manually selectable ranges, the range used (i.e. 0-1 V vs. 0-10 V), this should be recorded.
- Statement as to the measurement uncertainty, when required
- N/A means Not Applicable
- Please mark "" in relevant Cell to indicate the status of the item as selected.

Leakage Current Test (40)

Method:

1) When tested as described in 40.3 – 40.9, the leakage current of a seasonal lighting product shall not be more than 0.5 mA. The leakage current derived from that circuit need not be measured if the potential between the accessible part and ground or any other accessible part, from an insulated (not conductively connected to the line-voltage circuit) low-voltage supply, is less than:

- a) 42.4 V peak for an indoor product or where wet contact is not likely to occur, and
- b) 21.1 V peak for an outdoor product or where wet contact is likely to occur.

EUT is operating at: $U=U_n$, $F=F_n$.

Load of the EUT is under maximum normal load.

The input current and wAOCage to the EUT shall be measured

Location	Voltage	Measured current	Limit	--	
				Pass	Fail
DC input and enclosure	DC24V	0.01mA	0.5mA	√	

Conclusion:

This result (complied /-did not comply) with the requirements.

Leakage Current Following Humidity Conditioning (41)

Method:

- 1) A seasonal product shall comply with the requirements for leakage current contained in 40.1 of the Leakage Current Test, Section 40, following exposure for 48 hours to air having relative humidity of 88 ± 2 percent at a temperature of $32 \pm 2^{\circ}\text{C}$ ($90 \pm 4^{\circ}\text{F}$).
- 2) To determine whether a product complies with the requirements in 41.1, one product is to be heated to a temperature just above 34°C (93°F) to reduce the likelihood of condensation of moisture during conditioning. The heated product is to be placed in the humidity chamber and is to remain for 48 hours under the conditions specified in 41.1.
- 3) Following the conditioning, the product is to be tested, without load current flowing, as described in 40.8(a), either in the humidity chamber or immediately after removal of the conditioned product from the humidity chamber. Note that moisture in the air condensing on the conditioned product surfaces after removal from the chamber can invalidate the test results. After the test, without load current flowing, the product is to be energized and tested as described in 40.8 (b) and (c). For each test, the maximum leakage current is to be recorded and the test is to be discontinued when the leakage current stabilizes or decreases.

EUT is operating at: $U=U_n$, $F=F_n$.

Load of the EUT is under maximum normal load.

The input current and wAOCage to the EUT shall be measured At humidity of 90% , temperature of 32°C , 48h

Location	Voltage	Measured current	Limit	--	
				Pass	Fail
DC input and enclosure	DC24V	0.01mA	0.5mA	√	

Conclusion:

This result (complied /-did not comply) with the requirements.

INPUT TEST (42)**Method:**

- 1) Measurements for a product which employs dedicated receptacles are to be obtained with all unused receptacles operating at their maximum output rating.
- 2) One product is to be connected to a 120 V, 60 Hz supply source. For a product containing only incandescent lamps, the maximum marked wattage lamps are to be installed. For a controller or direct plug-in unit, the unit is to be adjusted to draw the maximum input current and wattage from the supply source. When a unit is provided with dedicated receptacles, the receptacles are to be connected to a variable resistor and the resistor is then to be adjusted to draw the maximum marked output wattage or current of the receptacles of the unit, whichever is greater. The measured input voltage and current are to be recorded.

EUT is operating at: $U=U_n$, $F=F_n$.

Load of the EUT is under maximum normal load.

The input current and watt to the EUT shall be measured.

Multiple rated voltages or rated voltage range, each rated voltage shall be measured.

The current and power shall be taken under steady state conditions.

Result:

42	TABLE: Electrical data (in normal conditions)					P
U (V)	I (A)	Prated (A)	P (W)	Limit	Ifuse (A)	Condition/status
DC24V	0.72	1.0	17.28	<110%	--	Max. load
Supplementary information:						

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Temperature Test (43)

Method:

EUT primary is U=Un, F=Fn, operated under normal max. load.

Temperatures of parts are measured by thermal couplers, windings are measured by resistance change method.

Measuring place shall be a point close to the heat source. The test is continued until thermal stable.

Voltage is changed lower or higher tolerance without rest of time.

Result:

43	TABLE: Thermal requirements							Pass
	Supply voltage (V)	DC24V	--	--	--	--		
	Ambient Tmin (C)	24.7	--	--	--	--		
	Ambient Tmax (C)	24.6	--	--	--	--		
	Max. load	yes	--	--	--	--		
Maximum measured temperature T of part/at::		T (C)					Allowed Tmax (C)	
Internal lead wire		38.2	--	--	--	--	80	
PCB near U1		38.3	--	--	--	--	130	
PCB near U2		36.7	--	--	--	--	130	
PCB near U3		37.2	--	--	--	--	130	
PCB near U5		35.8	--	--	--	--	130	
C1		36.7	--	--	--	--	105	
C2		40.5	--	--	--	--	105	
L1 winding		39.7	--	--	--	--	130	
LED light		37.5	--	--	--	--	130	
Enclosure of controller, inside		35.5	--	--	--	--	Ref.	
Enclosure of controller, outside		32.2	--	--	--	--	80	
Temperature T of winding:		t1 (°C)	R1 ()	t2 (°C)	R2 ()	T (C)	Allowed Tmax (C)	Insulation class
--		--	--	--	--	--	--	--
Supplementary information:								

Conclusion:

This result (complied /-did not comply) with the requirements.

Dielectric Voltage-Withstand Test (45) N/A**Method:**

The test is made while the EUT is still in well-heated condition Make sure the power switch of the EUT is in ON position.

Thin material can be tested in room temperature.

The test voltage is a.c. of 50 or 60 Hz or d.c. voltage equal to peak value of the a.c. voltage.

Test voltage is applied gradually raised from zero to the specified voltage and held at that value for 60s. Insulation breakdown is: Current flows through the insulation rapidly increases in an uncontrolled manner; that is the insulation does not restrict the flow of the current.

Corona discharge or a single momentary flashover is not regarded as insulation breakdown.

A test incorporating reinforced insulation and lower grades insulation (BI, SI), care is taken not to overstress BI or SI.

Where capacitors (X or Y capacitors) are across the insulation, d.c. voltage is recommended for the test. Discharge resistors shall be disconnected before testing.

Result:

45	Electric strength test	N/A	
Test voltage applied between:	Test voltage (V)	Breakdown	

Conclusion:

This result (complied /-did not comply) with the requirements.

Strain Relief Test (46) N/A**Method:**

46.1 After being tested as described in 46.2, a seasonal lighting product shall comply with all of the following:

- a) There shall not be any damage to any lead connection,
- b) There shall not be any breakage of the conductor or insulation,
- c) No portion of the conductor shall become exposed outside the enclosure of the product, if employed, and
- d) The lead pair or harness of input or output leads shall not be displaced more than 1/16 inch (1.6 mm) from the point of entry into the product.

46.2 All wires subject to handling are to be tested. The electrical connections of the input and output leads within the unit are to be removed or severed from their connection point inside the unit. The unit is to be securely supported and its input or output lead assembly, or both, is to be subjected to a pull of 20lbs (89 N) for a 18 AWG (0.82 mm²) or larger cord and 8 lbs (36 N) for a 20 AWG (0.52 mm²) or smaller cord. The pull is to be applied in a direction perpendicular to the plane and repeated in a direction normal to the cord-entry hole by suspending a weight from the input or output leads. The weight may be suspended from a pair or multiple leads if it is unlikely that an individual lead may be pulled. The pull is to be gradually applied to the pair of leads and maintained for a period of one minute.

Pull Location	Samples	Force	Observations	N/A	
				Pass	Fail
--	--	--	--	--	--

Conclusion:

This result (complied /-did not comply) with the requirements.

Abnormal Operation Test (48)

Method:

EUT is operating under normal load, $U=U_n$, $F=F_n$. A fault is then introduced. One fault only at one time. Ventilation openings shall be blocked; Semiconductors shall be short-circuited or open-circuited one at a time; Transformer secondary windings are short-circuited one at a time (other windings are normal loaded); Transformer secondary windings are overloaded one at a time (other windings are normal loaded), Fan is locked; Operational insulation which clearances or creepage distances are less than requirement, is short-circuited; Motors are locked.

The input current, fuse rating current, test duration and observation shall be recorded.

The test is continued until a protection device opened the circuit (fuse) or steady state conditions. Overload test and fault condition which the current is more than normal current, shall wait until thermal stable, coil temperature of transformer shall be recorded.

Result:

48	Fault condition tests (Continued)	Pass
Requirement	Result	Remarks
During the test:		
Fire propagates beyond the EUT?	No	
Enclosures deform to cause non-compliance with the standard?	No	

Conclusion:

This result (complied /-did not comply) with the requirements.

Conductivity of Decorative Parts Test (51)

Method:

51.1 When tested as described in 51.2, simulated needles, leaves, small twigs, and other loose decorative parts shall not conduct a current in excess of 5 mA.

51.2 Specimens of the material, in the widths employed, are to be spanned between two pairs of copper clamps, the ends of which are to be spaced 1/4 inch (6.4 mm) apart. The assembly is then to be connected in series with an adjustable supply source, an ammeter, and a 1500 ohm resistor. The potential is to be gradually increased from 0 to 120 V while the current flow is monitored and recorded. The current values obtained are to be mathematically converted to represent the equivalent of a 1/4-inch (6.4-mm) width grouping of material.

EUT is operating at: $U=U_n$, $F=F_n$.

Load of the EUT is under maximum normal load and connected a 1500 ohm resistor. The input current and wage to the EUT shall be measured

Location	Voltage	Measured current	Limit	--	
				Pass	Fail
DC input and Decorative Parts	DC24V	0.01mA	0.5mA	√	

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Routine Flexing Test (52) N/A

Method:

52.1 A motorized seasonal lighting product in which the current-carrying conductors are routinely flexed during normal operation is to be subjected to the test described in 52.2 and 52.3. As a result of the test, there shall not be any:

- a) Opening of circuits or conductors,
- b) Exposure of uninsulated conductor strands,
- c) Exposure of uninsulated live parts, and
- d) Increase in the risk of electric shock as determined by 52.3.

52.2 One previously untested product is to be mounted as intended, and allowed to rotate through a complete cycle of operation for a total of 100,000 cycles. During this test the conductors are to carry a current equivalent to the full load of the animated product.

52.3 After the conditioning described in 52.2, the product shall comply with the Dielectric Voltage-Withstand Test, Section 45. A light sculpture shall also be tested between live parts and the metallic frame, when provided.

Location	Test conditions	time	Observations	--	
				Pass	Fail
--	--	--	--	--	--

Conclusion:

This result (complied / did not comply) with the requirements.

Tests for Permanence of Cord Tag (56) N/A

Method:

56.2.1 Each of nine cord tags is to be applied to a cord and conditioned as described in 56.2.2 – 56.2.4, as indicated, before being tested as described in 56.3.1 and 56.3.2. If the tag is applied by an adhesive, the conditioning is to be conducted at least 24 hours after the application of the tag.

56.2.2 Each of three cord tags is to be tested in the as-received condition.

56.2.3 Each of three cord tags is to be placed in a $60 \pm 1^\circ\text{C}$ ($140 \pm 1.8^\circ\text{F}$) circulating-air oven for 240 hours. The cord tags are then to be conditioned at a room temperature of $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$) and 50 ± 5 percent relative humidity for 30 minutes.

56.2.4 Each of three cord tags is to be tested within 1 minute of being exposed to a humidity of 85 ± 5 percent at $32 \pm 2^\circ\text{C}$ ($89.6 \pm 3.6^\circ\text{F}$) for 72 hours.

56.2.5 In addition to the conditioning described in 56.2.2 – 56.2.4, if the tag is intended to be applied to the cord of a product intended for outdoor use, twelve additional cord tags are each to be applied to a cord and conditioned as described in 56.2.6 – 56.2.9, as indicated, before being tested as described in 56.3.1 and 56.3.2.

Location	Test conditions	Force	Observations	N/A	
				Pass	Fail
--	--	--	--	--	--

Conclusion:

This result (complied / did not comply) with the requirements.

Enclosure Mold Stress Relief Test (58)(100)

Method:

58.1 When conditioned as described in 58.2 and 58.3, there shall not be any:

- a) Softening of the material, as determined by examination immediately after the conditioning,
- b) Shrinkage, warpage, or other distortion of the enclosure material resulting in the exposure of live parts as determined by contact with the accessibility probe illustrated in Figure 9.1, and
- c) Cracking or denting of the enclosure of the unit that would affect the function of any safety controls or constructional features such as thermostats or strain relief, or result in the exposure of moving parts increasing the risk of injury to persons.

58.2 Component parts such as knobs, windows, or inserts that become distorted as a result of the test described in 58.3 may be removed if they interfere with the operation of the unit provided the removal of parts does not result in the inability of the unit to comply with the enclosure requirements in 10.1.1 and the accessibility of live parts requirements in 12.1.

58.3 Each of two previously untested units is to be tested. Each complete, unenergized unit is to be placed in a full-draft circulating air oven for a period of 7 hours at a temperature of 10°C (18°F) above the maximum operating temperature of the enclosure, measured at the hottest location on the inside of the enclosure during the Temperature Test, Section 43, but not less than 70°C (158°F).

EUT of complete equipment is placed in a circulating air oven for 7h. The temperature is 70°C. After test the EUT is permitted to cool to room temperature. Each enclosure material shall be tested.

Result:

Test samples	temperature	time	Observations
Plastic enclosure	70°C	7h	No change the enclosure

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Drop Test (59)

Method:

59.1 After being tested as described in 59.2 and 59.3, a product shall comply with all of the following:

- a) There shall not be any visible damage to the enclosure of the unit that would result in the exposure of live parts as determined by contact with the accessibility probe illustrated in Figure 9.1;
- b) There shall not be any cracking or denting of the enclosure of the unit that would affect the function of any safety controls or constructional features such as thermostats, overload protective devices, waterseals, or strain relief, or result in the exposure of moving parts increasing the risk of injury to persons;
- c) There shall not be any damage to the enclosure of the unit that would result in an increase in the risk of electric shock as determined by compliance with the Dielectric Voltage-Withstand Test, Section 45.

59.2 Each of three complete, previously untested products is to be subjected to this test. Each unit is to be dropped three consecutive times from a height of 3 ft (0.92 m) to strike a flat hardwood surface in the positions most likely to produce adverse results. Each unit is to be oriented in such a manner so that a different surface of the enclosure of the unit strikes the hardwood surface for each of the three drops. If the product is intended for outdoor use, it is to be dropped onto a concrete surface. Any lamps may be removed from the unit before the test.

59.3 The hardwood surface is to consist of a layer of nominal 1 inch (25 mm) tongue-and-groove oak flooring (actual size 3/4 by 2-1/4 inch or 18 by 57 mm) mounted on two layers of nominal 3/4 inch (19 mm) plywood. The assembly is to rest on a concrete floor or an equivalent non-resilient floor during the test.

Test conditions: Height=920mm

Result:

Location/Drop test	Drop No.	Observations	--	
			Pass	Fail
Plastic enclosure	1	No damaged	√	
Plastic enclosure	2	No damaged	√	
Plastic enclosure	3	No damaged	√	

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Impact Test (60)

Method:

60.1 After being tested as described in 60.2 and 60.3, a product shall comply with all of the following:

- a) There shall not be any visible damage to the enclosure of the unit that would result in the exposure of live parts as determined by contact with the accessibility probe illustrated in Figure 9.1;
- b) There shall not be any cracking or denting of the enclosure of the unit that would affect the function of any safety controls or constructional features such as thermostats, overload protective devices, waterseals, or strain relief, or result in the exposure of moving parts increasing the risk of injury to persons;
- c) There shall not be any damage to the enclosure of the unit that would result in an increase in the risk of electric shock as determined by compliance with the Dielectric Voltage-Withstand Test, Section 45.

Location/Drop test	Impact energy	Observations	--	
			Pass	Fail
Plastic enclosure	6.8J for 50.8 mm diameter steel sphere	No damaged for enclosure	√	
Plastic enclosure	6.8J for 50.8 mm diameter steel sphere	No damaged for enclosure	√	
Plastic enclosure	6.8J for 50.8 mm diameter steel sphere	No damaged for enclosure	√	

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Cold Impact Test (61)

Method:

61.1 In addition to the Impact Test, Section 60, a product intended for outdoor use shall comply with all of the following after being tested as described in 61.2:

- a) There shall not be any visible damage to the enclosure of the unit that would result in the exposure of live parts as determined by contact with the accessibility probe illustrated in Figure 9.1;
- b) There shall not be any cracking or denting of the enclosure of the unit that would affect the function of any safety controls or constructional features such as thermostats, overload protective devices, waterseals, or strain relief, or result in the exposure of moving parts capable of causing injury to persons;
- c) There shall not be any damage to the enclosure that would result in the increase of the risk of electric shock as determined by compliance with the Dielectric Voltage-Withstand Test, Section 45.

Result:

Location/Drop test	Temperature	Impact energy	Observations	--	
				Pass	Fail
Plastic enclosure	-35°C 3h	6.8J for 50.8 mm diameter steel sphere	No damaged for enclosure	√	
Plastic enclosure	-35°C 3h	6.8J for 50.8 mm diameter steel sphere	No damaged for enclosure	√	
Plastic enclosure	-35°C 3h	6.8J for 50.8 mm diameter steel sphere	No damaged for enclosure	√	

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Adhesive Test (63)

Method:

63.1 A product which employs an enclosure or part of an enclosure which is held together by adhesive is to be subjected to this test. After the conditioning described in 63.2, there shall not be breakdown of the adhesive to the extent that parts of the product can be readily separated.

63.2 A product is to be placed in a circulating-air oven for a period of fourteen days at a temperature of $90 \pm 1.0^{\circ}\text{C}$ ($194 \pm 1.8^{\circ}\text{F}$) or 10°C (18°F) above the maximum operating temperature of the enclosure, whichever is higher. After removal from the oven, the product is to be placed in a humidity chamber that has been adjusted for 88 ± 5 percent humidity at $32.0 \pm 2.0^{\circ}\text{C}$ ($89.6 \pm 3.6^{\circ}\text{F}$) for 7 days. Upon removal from the chamber, the product is to be examined to determine compliance with 63.1.

Location	Temperature, humidity	time	Observations
Plastic enclosure	32°C, 88%R.H.	7days	No changer the enclosure, No loose

Conclusion:

This result (complied / ~~did not comply~~) with the requirements.

Appendix 1: Critical components information					
Component Name	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
AC Adapter	XINGYUAN ELECTRONICS CO., LTD	XY24SE-240100VQ-UT	Input: 100-120V~ 50/60Hz, 0.5A Max Output: 24VDC, 1A	UL 1310	ETL 5003784
Internal wire and connecting wire	Various	Various	105 °C, 300Vac, 24AWG min.	UL 758	UL
PCB	LOMBER CIRCUITS (HUIZHOU) LTD	08V0	Rated V-0, 130°C, complied with UL 796.	UL 796	UL
Plastic enclosure	SABIC INNOVATIVE PLASTICS US LLC	945(GG)	PC, rated V-0, 120°C, min.1.5mm thickness	UL 94	UL
Remark:					

Pictures



Overall view_1 of product



Overall view_2 of product

Pictures



Overall view_3 of product



Overall view_4 of product

Pictures

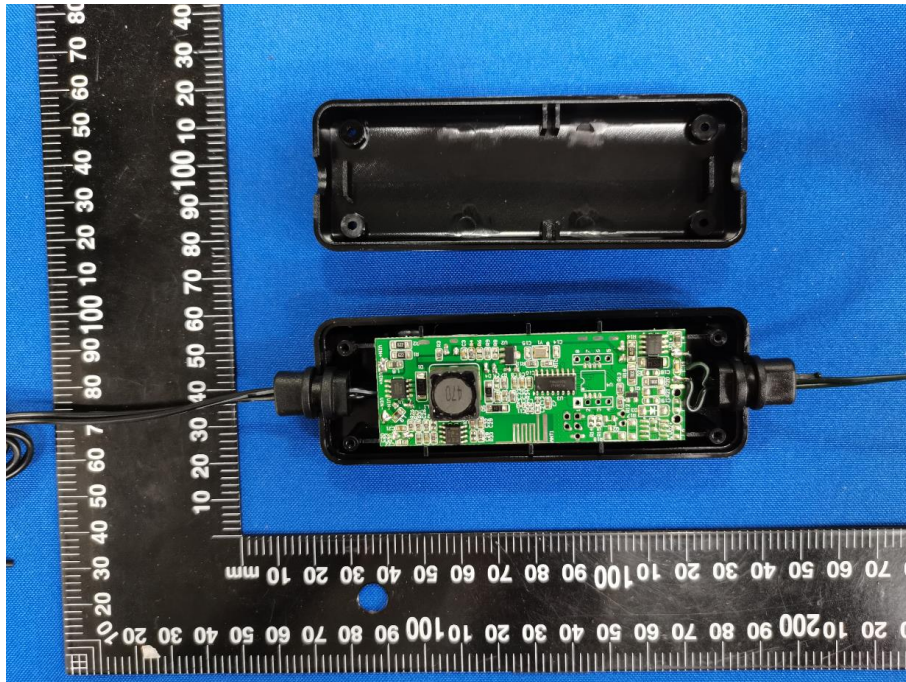


Overall view_5 of product

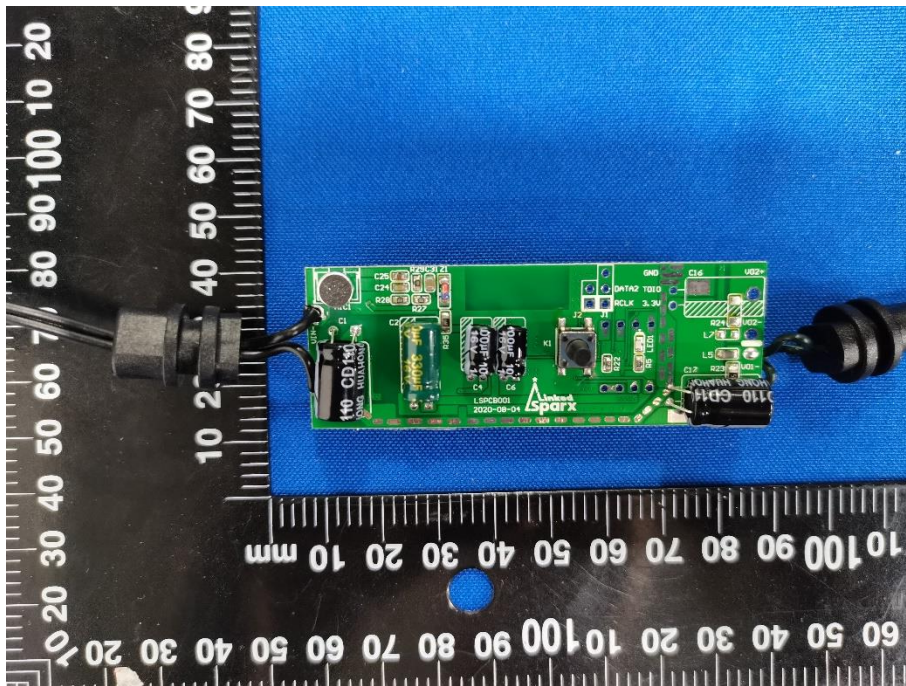


Overall view_6 of product

Pictures

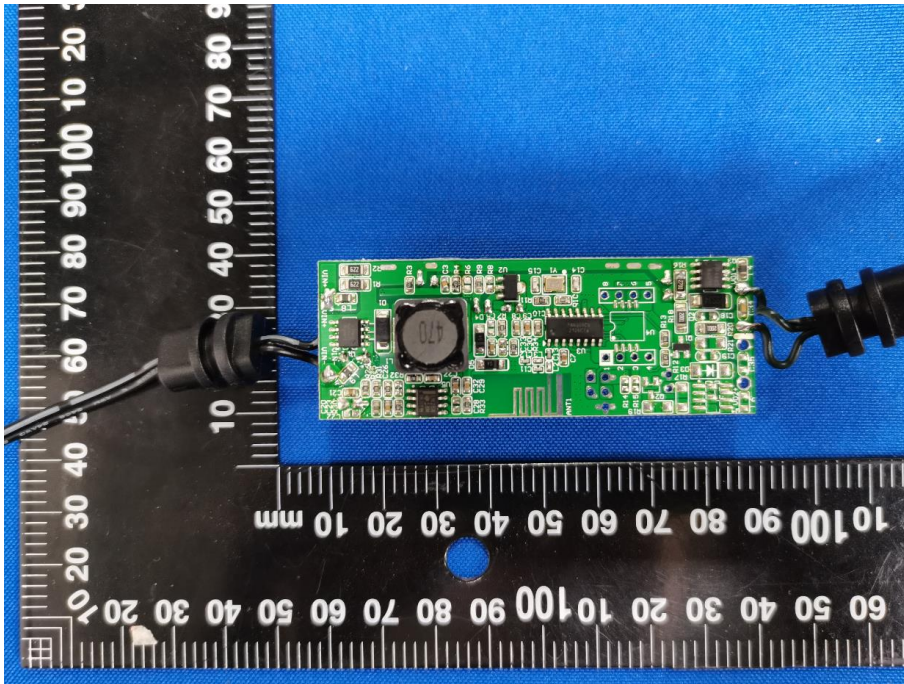


Internal view_1 of product



Internal view_2 of product

Pictures



Internal view_3 of product



AC Adapter view

***** End of report *****