



TEST REPORT

UL 588

Standard for Seasonal and Holiday Decorative Products

Job Number.:	AOC250925018S	
Test by (print+signature).....:	WanYang Ye	<i>WanYang Ye</i>
Checked by (print+signature)	Bill Hu	<i>Bill Hu</i>
Approved by (print+signature)	Robin Liu	<i>Robin Liu</i>
Date of issue	September 25, 2025	
Total number of pages	28 Pages	
Name of Testing Laboratory preparing the Report	Shenzhen AOCE Electronic Technology Service Co., Ltd Room 202, 2nd Floor, No.12th Building of Xinhe Tongfuyu Industrial Park, Fuhai Street, Baoan District, Shenzhen, Guangdong, China	
Applicant's name	DongGuan Zhuoshi Lighting Technology Co., Ltd.	
Address.....:	Room 101, No. 13, Yinlong Street, Yaole, Liaobu Town, Dongguan, Guangdong, China	
Manufacturer's name	DongGuan Zhuoshi Lighting Technology Co., Ltd.	
Address.....:	Room 101, No. 13, Yinlong Street, Yaole, Liaobu Town, Dongguan, Guangdong, China	
Product name.....:	LED string lights	
Brand name.....:	N/A	
Model/Type reference.....:	See Model List	
Test Standard	UL 588:2024 Ed.19	
Test procedure.....:	☒ Type Test	
Non-standard test method.....:	☒ N/A	
General remarks: The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. Throughout this report a ☐ comma / ☒ point is used as the decimal separator. When determining the test conclusion, the Measurement Uncertainty of test has been considered.		
Possible test case verdicts		
- test case does not apply to the test object.....:	N/A (or N)	
- test object does meet the requirement.....:	P (Pass)	
- test object does not meet the requirement	F (Fail)	
Date of receipt of test item	September 15, 2025	
Date(s) of performance of tests	September 15, 2025 to September 25, 2025	

Product information	
Product name.....:	LED string lights
Brand name.....:	N/A
Model/Type reference.....:	See Model List
Ratings.....:	12V, 6W
General product information: The product covered in this report is a LED string lights, which is supplied from cETLus approved Class 2 Power Supply. Relevant Technical consideration: - Maximum ambient temperature: 40°C - All models are identical with each other except model no., quantity of LED Lamp, equipment rack, and appearance (colour and silkscreen only) for trading purpose - DS-BRC-SL-100 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.	

Model List

Series	Model No		LED driver rating	Power (W)	SCH. of LED module	With
	Silver line	Green line				remote control
1	DS-BRC-SL-100	DS-BRC-GR-100	100-240V Input / 12V Output / 6W	1	2S50P	No
	DS-BRC-SL-300	DS-BRC-GR-300		3	2S150P	
	DS-BRC-SL-600	DS-BRC-GR-600	100-240V Input / 21V Output / 6W	5	5S120P	
	DS-BRC-SL-100-CTR	DS-BRC-GR-100-CTR	120V Input / 12V Output / 6W	1	2S50P	Yes
	DS-BRC-SL-300-CTR	DS-BRC-GR-300-CTR		3	2S150P	
	DS-BRC-SL-600-CTR	DS-BRC-GR-600-CTR	120V Input / 21V Output / 6W	5	5S120P	

2	DS-BPD-SL-100	DS-BPD-GR-100		100-240V Input / 12V Output / 6W	1	2S50P	No
	DS-BPD-SL-200	DS-BPD-GR-200			2	2S100P	
	DS-BPD-SL-300	DS-BPD-GR-300			4	3S100P	
	DS-BPD-SL-500	DS-BPD-GR-500		100-240V Input / 21V Output / 6W	6	5S100P	Yes
	DS-BPD-SL-100-CTR	DS-BPD-GR-100-CTR		120V Input / 12V Output / 6W	1	2S50P	
	DS-BPD-SL-200-CTR	DS-BPD-GR-200-CTR			2	2S100P	
	DS-BPD-SL-300-CTR	DS-BPD-GR-300-CT R	DS-BPD-GR-300-CTR-A		4	3S100P	
DS-BPD-SL-500-CTR	DS-BPD-GR-500-CTR		120V Input / 21V Output / 6W	6	5S100P		

3	DS-SL-300	DS-GR-300	100-240V Input / 12V Output / 6W	2	3S100P	No
	DS-SL-600	DS-GR-600		4	3S200P	
	DS-SL-1200	DS-GR-1200	100-240V Input / 21V Output / 6W	6	6S200P	
	DS-SL-2000	DS-GR-2000	100-240V Input / 29V Output / 9W	9	10S200P	
	DS-SL-300-CTR	DS-GR-300-CTR	120V Input / 12V Output / 6W	2	3S100P	Yes
	DS-SL-600-CTR	DS-GR-600-CTR		4	3S200P	
	DS-SL-1200-CTR	DS-GR-1200-CTR	120V Input / 21V Output / 6W	6	6S200P	
	DS-SL-2000-CTR	DS-GR-2000-CTR	120V Input / 29V Output / 9W	9	10S200P	

Series	Model No		LED driver rating	Power (W)	SCH. of LED module	With remote control
	Silver line	Green line				
4	DS-STAR-120	/	100-240V Input / 12V Output / 6W	2	2S60P	Yes
	DS-STAR-240	/	100-240V Input / 21V Output / 6W	3.5	4S60P	
	DS-STAR-360	/		4.5	6S60P	

Series	Model No		LED driver rating	Power (W)	SCH. of LED module	With remote control
	Silver line	Copper line				
5	DS-FW-SL-10	DS-FW-CO-10	120V Input / 29V Output / 9W	8	10S160P	Yes
	DS-FW-SL-5	DS-FW-CO-5	120V Input / 21V Output / 6W	4	5S160P	
	DS-FW-SL-3	DS-FW-CO-3	120V Input / 12V Output / 6W	2.8	3S160P	

Copy of marking plate (Representative)

LED string lights:

LED string lights
DS-BRC-SL-100
12V, 6W

Import: XXX
Address: XXX

Manufacturer: DongGuan Zhuoshi Lighting Technology Co., Ltd.

Address: Room 101, No. 13, Yinlong Street, Yaole, Liaobu Town,
Dongguan, Guangdong, China

Made in China

Test Item:

SEASONAL AND HOLIDAY DECORATIVE PRODUCTS

[UL 588:2024 Ed.19]

Test Required		Clause/ Section	Performance Test	Test Verdict	
Yes	N/A		Test Item Description	Pass	Fail
☒	☐	40	<u>LEAKAGE CURRENT TEST</u>	☒	☐
☒	☐	41	<u>LEAKAGE CURRENT FOLLOWING HUMIDITY CONDITIONING</u>	☒	☐
☒	☐	42	<u>INPUT TEST</u>	☒	☐
☒	☐	43	<u>TEMPERATURE TEST</u>	☒	☐
☐	☒	44	<u>MOUNTING POSITION TEST</u>	☐	☐
☒	☐	45	<u>DIELECTRIC VOLTAGE-WITHSTAND TEST</u>	☒	☐
☐	☒	46	<u>STRAIN RELIEF TEST</u>	☐	☐
☐	☒	47	<u>WIRE PUSH-BACK RELIEF TEST</u>	☐	☐
☒	☐	48	<u>ABNORMAL OPERATION TEST</u>	☒	☐
☐	☒	49	<u>COMPONENT POWER MEASUREMENT TEST</u>	☐	☐
☐	☒	50	<u>DOWNWARD BURNING RATE TEST</u>	☐	☐
☒	☐	51	<u>CONDUCTIVITY OF DECORATIVE PARTS TEST</u>	☒	☐
☒	☐	52	<u>ROUTINE FLEXING TEST</u>	☒	☐
☐	☒	53	<u>SLIP-RING ENDURANCE TEST</u>	☐	☐
☐	☒	55	<u>ABNORMAL TESTS FOR CONTROLLERS</u>	☐	☐
☒	☐	58	<u>ENCLOSURE MOLD STRESS RELIEF TEST</u>	☒	☐
☒	☐	59	<u>DROP TEST</u>	☒	☐

☒	☐	60	<u>IMPACT TEST</u>	☒	☐
☒	☐	61	<u>COLD IMPACT TEST</u>	☒	☐
☐	☒	62	<u>RESISTANCE TO CRUSHING TEST</u>	☐	☐
☒	☐	63	<u>ADHESIVE TEST</u>	☒	☐
☐	☒	68	<u>FUSEHOLDER CRUSH TEST</u>	☐	☐
☐	☒	69	<u>FUSEHOLDER COVER TEST</u>	☐	☐
☐	☒	71	<u>STRAIN RELIEF TEST FOR WIRING DEVICES</u>	☐	☐
☐	☒	72	<u>RELIABILITY OF CONDUCTOR CONNECTION TEST</u>	☐	☐
☐	☒	75	<u>INSULATION SECURENESS TEST</u>	☐	☐
☒	☐	78	<u>OVEN TEST</u>	☒	☐
☐	☒	79	<u>LAMPHOLDER STRAIN RELIEF TEST</u>	☐	☐
☐	☒	80	<u>SECURENESS OF LAMPHOLDER CONTACTS TEST</u>	☐	☐
☐	☒	81	<u>LAMPHOLDER MILLIVOLT DROP TEST</u>	☐	☐
☐	☒	82	<u>ROPE STRENGTH TEST</u>	☐	☐
☐	☒	83	<u>CRUSH TEST</u>	☐	☐
☐	☒	84	<u>CASCADE LAMP BURNOUT SIMULATION TEST</u>	☐	☐
☐	☒	85	<u>CASCADE LAMP TEMPERATURE TEST</u>	☐	☐
☐	☒	86	<u>CYCLING TEST</u>	☐	☐
☐	☒	87	<u>INPUT TEST</u>	☐	☐
☐	☒	89	<u>RAIN TEST</u>	☐	☐
☐	☒	90	<u>RAIN TEST FOR SERIES-CONNECTED LIGHTING STRINGS</u>	☐	☐

☐	☒	91	<u>STANDING WATER IMMERSION TEST</u>	☐	☐
☐	☒	92	<u>GASKET ADHESION TEST</u>	☐	☐
☐	☒	95	<u>FLEXING TEST</u>	☐	☐
☐	☒	96	<u>DECORATIVE LIGHTING STRING INTENDED FOR USE ON A PATIO UMBRELLA</u>	☐	☐
☐	☒	97	<u>TEMPERATURE AFTER FLEXING TEST</u>	☐	☐
☐	☒	99	<u>STABILITY TEST</u>	☐	☐
☐	☒	SD8	<u>STRAIN RELIEF TEST</u>	☐	☐
☐	☒	SD9	<u>FLEXING TEST</u>	☐	☐
☐	☒	SD10	<u>CONDITIONING TEST PRIOR TO RAIN TEST</u>	☐	☐
☐	☒	SD11	<u>ABNORMAL OPERATION TEST</u>	☐	☐

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:**

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

Load of the EUT is under maximum normal load.

The input current and voltage to the EUT shall be measured

Location	Voltage	Measured current	Limit	--	
				Pass	Fail
DC input and enclosure	12V	0.01mA	0.5mA	√	

Equipment used: AOC-S-002, AOC-S-014

Leakage Current Following Humidity Conditioning (41)**Method:**

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	12V	0.01mA	0.5mA	√	

Equipment used: AOC-S-002, AOC-S-014

INPUT TEST (42)**Method:**

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 (W)	P (W)	Limit	Ifuse (A)	Condition/status
12	0.5	6	5.9	<110%	--	Max. load
Supplementary information:						

Equipment used: AOC-S-014

Temperature Test (43)**Method:**

EUT primary is $U=U_n$, $F=F_n$, 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)	12V	12V			
	Ambient Tmin (°C)	24.5	24.6	--	--	
	Ambient Tmax (°C)	24.4	24.5	--	--	
	Max. load	100 lights	lamp envelope 90°C			
Maximum measured temperature T of part/at::		T (°C)				Allowed Tmax (°C)

Lead wire	39.6	40.9	--	--	105	
Lamp envelope	46.1	49.5	--	--	Ref.	
Enclosure	40.0	45.3	--	--	80	
Connector	35.2	36.7	--	--	80	
Supplementary information:						
Temperature T of winding:	t1 (°C)	R1 (0)	t2 (°C)	R2 (0)	T (°C)	Allowed T _{max} (°C)
--	--	--	--	--	--	--
Supplementary information:						

Equipment used: AOC-S-014, AOC-S-027, AOC-S-028

Dielectric Voltage-Withstand Test (45)

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)
--		--

Equipment used:

Strain Relief Test (46)

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

Equipment used:

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	

Conductivity of Decorative Parts Test (51)

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	12V	0.01mA	0.5mA	√	

Equipment used: AOC-S-014, AOC-S-002

Routine Flexing Test (52)

Location	Test conditions	time	Observations	--	
				Pass	Fail
cord	Normal work	100,000 cycles	No damage, can't touch the live part.	✓	

Equipment used: AOC-S-056

Tests for Permanence of Cord Tag (56)

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

Equipment used: AOC-S-004, AOC-S-013

Enclosure Mold Stress Relief Test (58)(100)

Condition: Enclosure of molded or formed thermoplastic materials are subjected this test.

Method:

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
Enclosure of LED lamp	70°C	7h	No change the enclosure

Equipment used: AOC-S-004

Drop Test (59)

Test conditions: Height=920mm

Location/Drop test	Drop No.	Observations	--	
			Pass	Fail
Enclosure of LED lamp	1	No damaged	✓	
Enclosure of LED lamp	2	No damaged	✓	
Enclosure of LED lamp	3	No damaged	✓	

Equipment used: AOC-S-050

Impact Test (60)

Location/Drop test	Impact energy	Observations	--	
			Pass	Fail
Enclosure of LED lamp	6.8J for 50.8 mm diameter steel sphere	No damaged for Enclosure	✓	
Enclosure of LED lamp	6.8J 50.8 mm diameter steel sphere	No damaged for Enclosure	✓	
Enclosure of LED lamp	6.8J 50.8 mm diameter steel sphere	No damaged for Enclosure	✓	

Equipment used: AOC-S-025, AOC-S-050

Cold Impact Test (61)

Location/Drop test	Temperature	Impact energy	Observations	--	
				Pass	Fail
Enclosure of LED lamp	-35°C 3h	6.8J for 50.8 mm diameter steel sphere	No damaged for Enclosure	✓	
Enclosure of LED lamp	-35°C 3h	6.8J 50.8 mm diameter steel sphere	No damaged for Enclosure	✓	
Enclosure of LED lamp	-35°C 3h	6.8J 50.8 mm diameter steel sphere	No damaged for Enclosure	✓	

Equipment used: AOC-S-004, AOC-S-025, AOC-S-050

Adhesive Test (63)

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

Equipment used: AOC-S-004

Appendix 1: Critical components information					
Component Name	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity
Internal wire and connecting wire	Various	Various	105 °C, 300Vac, 24AWG min.	UL 758	UL
Material of connector	Various	Various	PBT, Min thickness 0.75mm, Min HB, Min 105° C.	UL 94	UL
Remark:					

PHOTOS:

Details of: Overview for model DS-BPD-GR-300-CTR-A, DS-BPD-GR-500-CTR, DS-BPD-GR-300-CTR
DS-BPD-GR-200-CTR, DS-BPD-GR-100-CTR



Details of: Overview for model DS-BPD-GR-500, DS-BPD-GR-300, DS-BPD-GR-200, DS-BPD-GR-100



Details of: Overview for model DS-BPD-SL-100, DS-BPD-SL-200



Details of: Overview for model DS-BPD-SL-300-CTR, DS-BPD-SL-200-CTR, DS-BPD-SL-100-CTR



Details of: Overview for model DS-BPD-SL-500-CTR



Details of: Overview for model DS-BRC-GR-600, DS-BRC-GR-300, DS-BRC-GR-100



Details of: Overview for model DS-BRC-GR-600-CTR, DS-BRC-GR-300-CTR, DS-BRC-GR-100-CTR



Details of: Overview for model DS-BRC-SL-300-CTR, DS-BRC-SL-100-CTR



Details of: Overview for model DS-BRC-SL-600, DS-BRC-SL-300, DS-BRC-SL-100



Details of: Overview for model DS-FW-CO-10, DS-FW-CO-5, DS-FW-CO-3



Details of: Overview for model DS-FW-SL-5, DS-FW-SL-3



Details of: Overview for model DS-FW-SL-10



Details of: Overview for model DS-GR-2000, DS-GR-1200, DS-GR-600, DS-GR-300



Details of: Overview for model DS-SL-300



Details of: Overview for model DS-SL-1200-CTR, DS-SL-600-CTR, DS-SL-300-CTR



Details of: Overview for model DS-SL-2000, DS-SL-1200, DS-SL-600



Details of: Overview for model DS-SL-2000-CTR



Details of: Overview for model DS-STAR-360, DS-STAR-240, DS-STAR-120



Details of: Overview for model S-BRC-SL-600-CTR



Details of: Overview for model S-GR-2000-CTR, DS-GR-1200-CTR, DS-GR-600-CTR, DS-GR-300-CTR



Details of: Overview for model power supply 1



Details of: Overview for model power supply 2



Details of: Overview for model power supply 3



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