

APPLICATION FOR TEST REPORT
UL 1993
On Behalf of

Prepared For : Zhongshan (Sun Yat-sen) Electronics Co., Ltd.

Address : 1st Floor, 3rd Floor, Building 1, No. 10, Lefeng 1st Road, Henglan Town,
Zhongshan City

Product Name : Emergency A foam

Model : PY502, RY502A

Trade Name : N/A

Manufacturer : Zhongshan (Sun Yat-sen) Electronics Co., Ltd.

Address : 1st Floor, 3rd Floor, Building 1, No. 10, Lefeng 1st Road, Henglan Town,
Zhongshan City

Prepared By : RED Laboratories Inc.
Room 101, Building A, Zhengtailai Hi-Tech Innovation Park, Yintian
Creative Park, Yantian Community, Xixiang Subdistrict, Bao'an District,
Shenzhen, Guangdong, China

Test Date : 2025. 10. 30 to 2025. 11. 13

Date of Report : 2025. 11. 13

Report No. : RED251113183004ED-AM

UL 1993 TEST RECORD

Standard: <u>UL 1993-2012</u>			
Report No.:	RED251113183004ED-AM	Client:	Zhongshan (Sun Yat-sen) Electronics Co., Ltd.
Product:	Emergency A foam	Rated input	AC85-265V, 52-59A, 9W, 50/60Hz
Project Engineer:	Hank Chen	Rated output	DC24V, 0.2A
Test Engineer:	Steve Liu	Protection class	Class II
Application Date	2025. 10. 30	Protection against moisture:	IPX0
Requested Date	2025. 11. 13	Construction:	The pendants on the string lights are made of plastic etc.
Re-test	☐	Operation mode	Continuous
Full-test	☒	Weight:	<100g
Model/ type reference:	PY502, RY502A	Sample No.	1#, 2#
Should the heating test be done in heating oven?	☐ Yes °C ☒ No		
Altitude during operation (m)	☐ Up to 2000 ☒ No		
Altitude of test laboratory (m)	☒ below 2000 ☐ No		
Other information:.....	Indoor use for Emergency A foam.		
Modify information:.....	N/A		

Lab Use Only			
Lab Start Date	2025. 10. 30	Lab Finish Date	2025. 11. 13
Ambient Temperature, °C	24.1	Relative Humidity, %	47

Remarks:

Tested by: Steve Liu

Checked by: Hank Chen

No.1	Clause(s)	Test(s)	Remark	Comment
1	5.1	Enclosures	Polymeric materials	N/A
2	5.2	Openings	No opening <2mm	Pass
3	5.3	Polymeric materials	<15VA 650°C Glow wire test Pass	Pass
4	5.4	Weight and moment	clips	Pass
5	6	Electrical Construction		Pass
6	6.1	Lamp bases and lampholders		Pass
7	6.2	Current-carrying parts		Pass
8	6.3	Printed circuit boards		Pass
9	6.4	Ballasts and LED drivers		N/A
10	6.5	Power capacitors	No this capacitor	N/A
11	6.6	Spacing of electrical parts	<6V	N/A
12	6.7	Accessibility of live parts	<6V	N/A
13	6.8	Light source – fluorescent lamps	LED	N/A
14	6.9	Light source – light emitting diodes (LED)		Pass
15	6.10	Light source – non-discharge lamps		N/A
16	7	Environmental Locations	Dry locations Damp locations	Pass
17	8	Strain Relief Test	See table	Pass
18	8.2	Input measurements	See table	Pass
19	8.3	Lamp starting and operating measurements		N/A
20	8.4	Leakage-current test		N/A
21	8.5	Temperature test	See table	Pass
22	8.6	Dielectric voltage-withstand test	See table	Pass
23	8.7	Harmonic distortion test		N/A
24	8.8	Drop impact test	See table	Pass
25	8.9	Mold-stress relief conditioning	See table	Pass
26	8.10	Deflection test		Pass
27	8.11	Strain relief test for lamp connectors		N/A
28	8.12	Tests of dimmer circuits		N/A
29	8.13	Humidity conditioning		Pass
30	8.14	Water spray test		N/A

31	8.15	Cold impact test	See table	Pass
32	8.16	Lamp fault conditions test	See table	Pass
33	8.17	End-of-lamp-life tests for fluorescent lamp adapters		N/A
34	8.18	End-of-life test for integral, self-ballasted fluorescent lamps – one filament emission-mixfree test		N/A
35	10	Device Markings		Pass

INPUT TEST (8.2)

Method:

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

Load of the EUT is under maximum normal load.

The input current and wattage 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)	I rated (A)	P (W)	Limit	Ifuse (A)	Condition/status
DC 6V	0.047	0.282	1.242	<110%	--	Normal use
2*CR2032 (DC3V)	0.045	0.279	1.366	<110%	--	Normal use
Supplementary information:						

Equipment used: CTT14S, CTT15S, CTT48S

Leakage Current Test (8.4)

8.4	Leakage Current Test, DC 13.4V			N/A
Test voltage:		240V/ 50Hz		
Measured point:		U ₂ (mV)	(mA)	Limit (mA)
Line and output accessible terminal		--	--	0.5
Neutral and output accessible terminal		--	--	0.5
Line and accessible enclosure surface		--	--	0.5
Neutral and accessible enclosure surface		--	--	0.5
Oscilloscope, Measuring circuit for touch current according to Annex D, Leakage Current Tester				

Normal Temperature Test (8.5)

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:

8.5	TABLE: Thermal requirements,						Pass
	Supply voltage (V)	DC6V	--	--	--	--	—
	Ambient Tmin (°C)	24.1	--	--	--	--	—
	Ambient Tmax (°C)	24.2	--	--	--	--	—
	Max. load	Normal Load	--	--	--	--	
	Model	--	--	--	--	--	
Maximum measured temperature T of part/at:		T (°C)					Allowed Tmax (°C)
PCB near Battery		--	--	--	--	130	
Battery		--	--	--	--	80	
Enclosure		34.1	--	--	--	80	
LED		37.6	--	--	--	70	
Lamp base		38.3	--	--	--	150	
Ambient		24.2	--	--	--		
Supplementary information:							
Temperature T of winding:		t1 (°C)	R1 (Ω)	t2 (°C)	R2 (Ω)	T (°C)	Allowed Tmax (°C)
		--	--	--	--	--	--
Supplementary information:							

8.5	TABLE: Thermal requirements,						Pass
	Supply voltage (V)	Battery CR2032	--	--	--	--	—
	Ambient Tmin (°C)	24.3	--	--	--	--	—
	Ambient Tmax (°C)	24.7	--	--	--	--	—
	Max. load	Normal Loa	--	--	--	--	
	Model	--	--			--	
Maximum measured temperature T of part/at::		T (°C)					Allowed Tmax (°C)
PCB near Battery		31.5	--	--	--	--	130
Battery		32.1	--	--	--	--	80
Enclosure		34.1	--	--	--	--	80
LED		37.6	--	--	--	--	70
Lamp base		38.3	--	--	--	--	150
Ambient		24.7					
Supplementary information:							
Temperature T of winding:		t1 (°C)	R1 (Ω)	t2 (°C)	R2 (Ω)	T (°C)	Allowed Tmax (°C)
		--	--	--	--	--	--
Supplementary information:							

Equipment used: CTT15S, CTT27S, CTT28S

Dielectric Voltage-Withstand Test (8.6)

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.

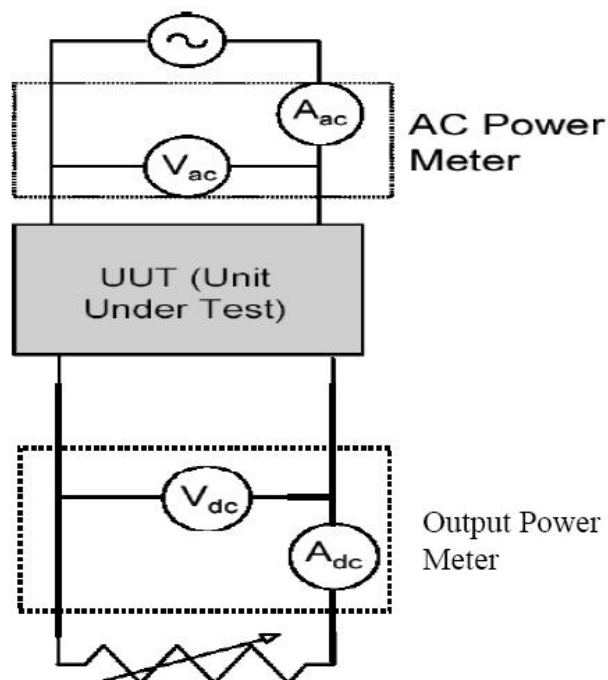
Where capacitors (X or Y capacitors) are across the insulation, d.c. voltage is recommended for the test.

Discharge resistors shall be disconnected before testing.

Result:

34	Electric strength test		Pass
Test voltage applied between:		Test voltage (V)	Breakdown
Input and plastic enclosure		500	No
--			

Harmonic distortion test (8.7)



	measured	Limit	N/A	
			Pass	Fail
Total harmonic distortion (THD)	--	--	--	--
Remark	DC 6V			

Drop Test (8.8)

Test conditions: Height=920mm

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

Equipment used: CTT50S

Mold-stress relief conditioning (8.9)

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
Enclosure for PCB	70°C	7h	No change the enclosure

Equipment used: CTT04S

Deflection test (8.10)

Pull Location	Samples	Force	Observations	--	
				Pass	Fail
Enclosure	1#	20lbs (89N) 12 mm (0.472 in) diameter rod with a hemispherical end.	No damaged, No hazard,	√	

Strain relief test for lamp connectors (8.11)

Pull Location	Samples	Force	Observations	N/A	
				Pass	Fail
lamp holder	--	--	--	--	--
lamp holder	--	--	--	--	--
lamp holder	--	--	--	--	--
lamp holder	--	--	--	--	--
lamp holder	--	--	--	--	--
lamp holder	--	--	--	--	--
Remark: No wire in holder					

Tests of dimmer circuits (8.12)

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:

8.12	Fault condition tests (Continued)		N/A
Requirement	Result	Remarks	
During the test:			
Fire propagates beyond the EUT?	--		
Molten metal emitted?	--		
Enclosures deform to cause non-compliance with the standard?	--		

8.12	TABLE: Fault condition tests					N/A
	Ambient temperature (°C)				25.3 °C	—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	current (A)	Observation
--	--	--	--	--	--	--
Supplementary information:						
S: Short-circuited; O: Open-circuited; O/L: Overloaded						
Equipment used:CTT15S, CTT48						

Humidity conditioning (8.13)

8.13	Humidity Conditioning Test			Pass
Test voltage: 48h, 95%R.H., 32°C				
Measured point:		Test V (V)	Breakdown	Limit
Input and Enclosure		DC 500V	No	10mA
Neutral and output accessible terminal		--	--	
Line and accessible enclosure surface		--	--	
Neutral and accessible enclosure surface		--	--	
Oscilloscope, Measuring circuit for touch current according to Annex D, Leakage Current Tester				

Water spray test (8.14)

Pull Location	Samples	Time	Observations	N/A	
				Pass	Fail
IPX0				--	--

Leakage Current Test

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

Load of the EUT is under maximum normal load.

The input current and wattage to the EUT shall be measured

Location	Voltage	Measured current	Limit	N/A	
				Pass	Fail
--	--	--	--	--	--

8.14	Electric strength test		N/A
Test voltage applied between:		Test voltage (V)	Breakdown
Input and plastic enclosure, lamp		--	--
Input and wire		--	--
L and N, without fuse		--	--

Cold Impact Test (8.15)

Location/Drop test	Temperature	Impact energy	Observations	--	
				Pass	Fail
LED lamp of Enclosure	-35°C 3h	--	No damaged for Enclosure	√	
LED lamp of Enclosure	-35°C 3h	--	No damaged for Enclosure	√	
LED lamp of Enclosure	-35°C 3h	--	No damaged for Enclosure	√	
LED lamp of Enclosure	-35°C 3h	--	No damaged for Enclosure	√	
LED lamp of Enclosure	-35°C 3h	--	No damaged for Enclosure	√	
LED lamp of Enclosure	-35°C 3h	--	No damaged for Enclosure	√	

After cold test, Drop Test

Test conditions: Height=920mm

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

Equipment used: CTT50S

Lamp fault conditions test (8.16)

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:

8.16	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	

8.16	TABLE: Fault condition tests						Pass
	Ambient temperature (°C)					25.3 °C	—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	current (A)	Observation	
First LED lights	S	DC6V	10mins	--	0.015	Still Normal work for other LED lamp, No damage, no hazards	
The end of LED lights	S	DC6V	10mins	--	0.016	Still Normal work for other LED lamp, No damage, no hazards	
LED 1 and LED 2	S	DC6V	10mins	--	0.005	Still Normal work for LED lamp, No damage, no hazards, no flame	
High Current Inrush	Over load	DC6V	30mins		6A	No Damage, no hazards, no flame	
Supplementary information:							
S: Short-circuited; O: Open-circuited; O/L: Overloaded							

Equipment used: CTT15S, CTT48S, CTT27S, CTT28S

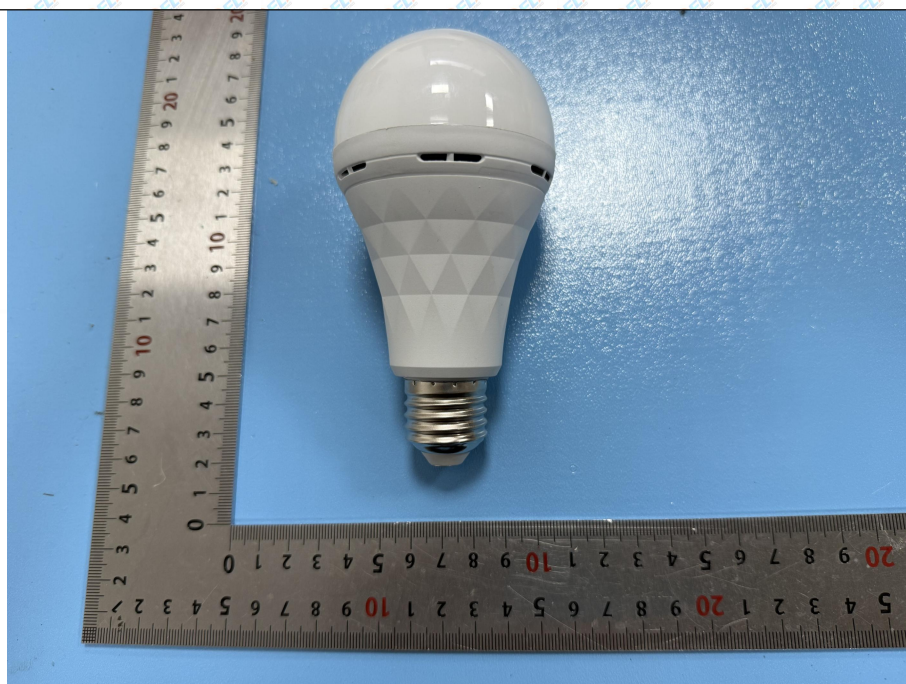
End-of-lamp-life tests for fluorescent lamp adapters (8.17)

--	-	---	--	N/A	
				Pass	Fail
--	--	--	--	--	--

End-of-life test for integral, self-ballasted fluorescent lamps – one filament emission-mixfree Test (8.18)

---	-	---	--	N/A	
				Pass	Fail
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Photo documentation



.....End of Report.....