

Test report

Test items	High temperature test
Test object	LLS-OP-W20A-L10-DMX
Purpose of detection	Test whether the temperature of lamps and key components is within the range of standard requirements
Test time	Start 2024-11-26 08:30 and end: 2024-11-26 12:30

Testing instrument: thermometer + thermostat

Reference standard: industry experience, electronic components specification standard

Determination method:

1: high temperature test standards: observe the appearance of the lamp is normal, if there are abnormal conditions, such as switch failure, shell deformation, etc., need to record and evaluate its impact on product performance and safety;

Experimental methods and steps:

- 1: Light the lamp and place it for 2 hours, the temperature of the whole lamp is constant;
- 2: the thermostat set temperature for 2 hours, the internal temperature of the thermostat is constant;
- 3: The probe is fixed on each test point with temperature glue;
- 3: After the temperature of the lamp and the incubator is stable, the lamp is put into the incubator for testing for 4 hours.

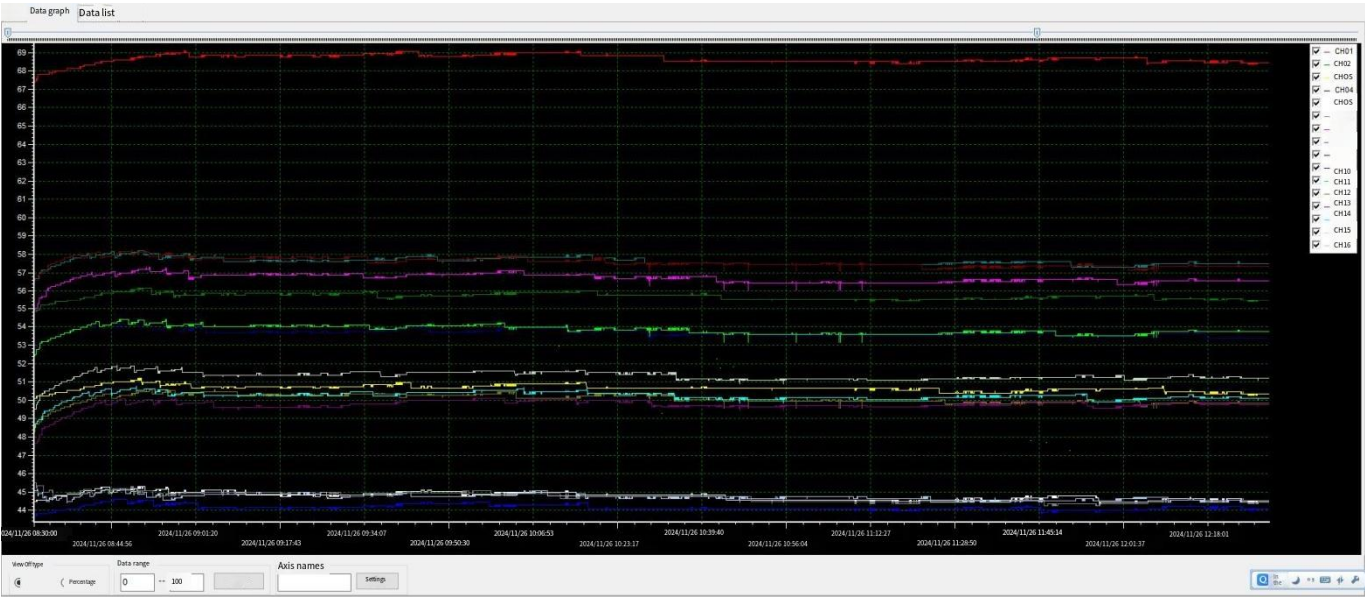
Test data:

Test 1:1. In 2024/11/26-08:30~12:30, when the thermostat is set at 45°C, the lamp is connected to 24V DC voltage point and fully lit for 4 hours;

Test scene diagram:



The following is the 45°C temperature curve from 2024/11/26-08:30 to 12:30:



Test data:

The following is the test data sheet:

Time: 2024/11/26		Ambient temperature: 45°C		LLS-OP-W20A-L10-DMX		时间: 2024/11/26	环境温度: 45°C	LLS-OP-W20A-L10-DMX	
		8:30~ 12:30		Input voltage: 24V DC				8:30~12: 30	
Point in Time		0 min	60 minutes	120 minutes	180 min	240 min	时间点	0分钟	60分钟
Light board	UCS2912 Patch IC (-40~80°C)-1CH lamp bead pin (Junction temperature: 125°C)-2CH lamp bead. φ20 outside the lamp board point -3CH	52.90	68.80	68.80	68.50	68.50	UCS2912贴片IC (-40~80°C)-1CH	52.90	68.80
		41.20	55.90	55.80	55.50	55.50	灯珠引脚(结温: 125°C)-2CH	41.20	55.90
		35.80	50.80	50.60	50.40	50.40	灯珠φ20外的灯板点-3CH	35.80	50.80
	The closest point of the lamp bead to the enclosure -4CH	29.20	44.10	44.10	44.10	44.10	灯珠距离外壳最近点-4CH	29.20	44.10
	End caps -5CH	27.90	44.90	44.80	44.60	44.50	端盖-5CH	27.90	44.90
Control panel	Control box -6CH	27.40	44.80	44.80	44.50	44.50	控制盒-6CH	27.40	44.80
	Patch Schottky Diode (D1 continuous current diode)(50 to 125° C)-7CH Patch Schottky Diode (D2 Anti-reverse connection)(50 to 125° C)-8CH	41.80	56.90	56.70	56.50	56.60	贴片肖特基二极管 (D1续流二极管)(-50~125°C)-7CH	41.80	56.90
		43.60	57.60	57.50	57.50	57.50	贴片肖特基二极管 (D2防反接)(-50~125°C)-8CH	43.60	57.60
	Electrolytic capacitors (C7)-55 ~105°C)-9CH	39.90	53.70	53.50	53.60	53.40	电解电容(C7)(-55 ~105°C)-9CH	39.90	53.70
	TPS54360B chip IC	91.30	95.60	95.60	95.40	95.50	TPS54360B贴片IC (U1)(-40~150°C) -10CH	91.30	95.60
	(U1)(-40~150°C)-10CH Patch inductor (L1)(-40 C~125°C)-11CH	40.00	54.00	53.80	53.70	53.70	贴片电感(L1)(-40 °C~125°C)-11CH	40.00	54.00
	Tantalum capacitor (C2)(-55° C ~125°C)-12CH	36.70	50.20	50.20	49.80	49.90	钽电容(C2)(-55°C ~125°C)-12CH	36.70	50.20
	UCS512C0 Chip IC (U2)(-45 to 85° C)13CH Patch Diode (D3)(50 to 125° C)-14CH	33.20	49.70	49.60	49.70	49.80	UCS512C0贴片IC (U2)(-45~85°C)-13CH	33.20	49.70
		35.30	50.40	50.30	50.10	50.10	贴片二极管(D3)(-50~125°C)-14CH	35.30	50.40
	Patch resistor (RV1)(-55 C~125°C)-15CH	37.10	51.50	51.40	51.10	51.20	贴片电阻(RV1)(-55 °C~125°C)-15CH	37.10	51.50
	Temperature in incubator-16CH	20.90	44.70	44.60	44.40	44.50	恒温箱内温度-16CH	20.90	44.70

Test results:

From the above data, it can be seen that when the ambient temperature is 45°C, full light, full load, each temperature node is in the controllable range.

Test conclusion:

This LS-OP-W20A-L10-DMX can satisfy the heat dissipation requirement even in full brightness state

General conclusion of the test:

- 1、The temperature of the incubator space in this high temperature test reached a maximum of 68.8°C;
- 2、The IC temperature of the UCS2912 patch of the lamp board (-40~80°C), the actual temperature under the high temperature state is 73°C;
Lamp bead pin temperature (junction temperature: 125°C), the actual temperature under the high temperature state is the highest 55.9°C;
The point temperature of the lamp board outside the lamp bead $\phi 20$, the actual temperature is the highest of 50.8°C under high temperature state;
The closest point temperature from the lamp bead to the shell, the actual temperature under the high temperature state is the highest 44.1°C;
End cover temperature, the actual temperature under high temperature state is the highest 44.9°C;
The temperature of the control box, the actual temperature under the high temperature state is the highest 44.8°C;
The working temperature of the patch Schottky diode (D1 continuous current diode) is (-50~125°C), and the actual temperature is up to 56.9°C in the high temperature state;
The working temperature of the patch Schottky diode (D2 anti-reverse connection) is (-50~125°C), and the actual temperature is the highest of 57.6°C in the high temperature state;
The working temperature of the electrolytic capacitor (C7) (-55 ~105 °C), the actual temperature under the high temperature state is the highest 53.7°C;
The working temperature of TPS54360B chip IC(U1) is -40 ~150 °C , and the actual temperature is up to 95.6 °C under high temperature condition;
The working temperature of the chip inductor (L1) is (-40°C~125°C), and the actual temperature is up to 54°C in the high temperature state;
Tantalum capacitor (C2) operating temperature (-55°C~125°C), the actual temperature under the high temperature state of the highest 50.2°C;
The working temperature of UCS512C0 chip IC(U2) is (-45~85°C), and the actual temperature is 49.8°C;
The working temperature of the patch diode (D3) is (-50~125°C), and the actual temperature is up to 50.4°C in the high temperature state;
The working temperature of the patch resistor (RV1) (-55 °C ~125 °C), the actual temperature under the high temperature state is the highest 51.4°C;
- 3, the test in the high temperature 45 °C state, 24V input of the whole lamp temperature measuring point has a temperature difference of 10~15°C;
- 4, LS-OP-W20A-L10-DMX even in the full bright state, the temperature of each node is controlled within the safe range, the heat dissipation is normal, does not affect the normal use of the lamp, this test is only responsible for the sample.