

TEST REPORT

1. General

Client: LightLab Sweden AB
Address: Vikingavägen 17E, SE -133 33 Saltsjöbaden, Sweden

Test Lab: Intertek Testing Services Hangzhou Ltd.
Address: 16 No. 1 Ave., Xiasha Economic Development District, Hanzhou 310018, CHINA

Product: LightLab Lamps

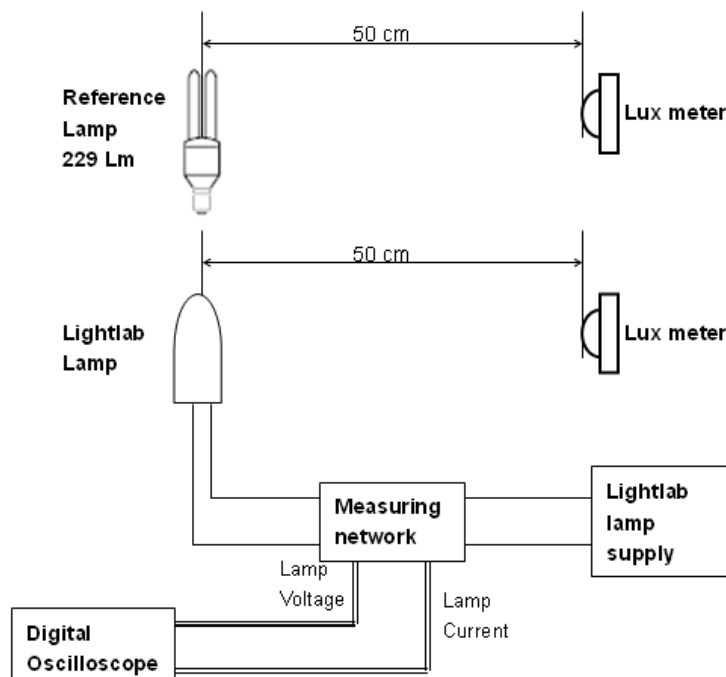
Test Items: Luminous flux; Luminous efficiency

Test date: November 2, 2009

2. Test method by LightLab Sweden AB

2.1 Test arrangement:

The luminous efficiency of Lightlab lamps are evaluated by comparison from the reference lamp. Test arrangement is shown as below:



The luminous flux of the reference CFL is measured with standard test method in the integrating sphere by spectroradiometer. Then, the illuminance at a distance of 50 cm of the reference CFL is measured by Luxmeter.

The test samples of LightLab lamps are placed at the same position of the reference CFL, 50 cm distance from the Luxmeter. Adjust the power supply of LightLab lamps to the readings of Luxmeter reach the same value of reference CFL. Then, the lamp wattage of LightLab lamps are measured by Digital Oscilloscope connecting to the measuring network. The equivalent luminous efficiency of the LightLab lamps is calculated by luminous flux divided by measured lamp wattage.

2.2 Test data:

2.2.1 Reference lamp: Philips Compact fluorescent lamp, rated 110V 4,5W.

Luminous flux = 229 lm;

Illuminance at 50 cm = 88 lux

2.2.2 LightLab lamps:

Sample No.	Lamp Wattage (Watt)	Equivalent Luminous Efficiency (Lm per watt)
1	4.2	54.5
2	3.2	71.6
3	5.2	44.0
4	4.7	48.7
5	4.7	48.7
6	3.7	61.9
7	6.8	33.7
8	4.2	54.5
9	5.5	41.6
10	6.4	35.8

2.3 Test result:

Average luminous efficiency = 49.5 lm/watt

Maximum luminous efficiency = 71.6 lm/watt

The test method of Lightlab Sweden AB is effective to evaluate the equivalent luminous efficiency for their lamps.

3. Standard test method with integrating sphere and spectroradiometer

3.1 Test equipment: Sensing SPR-920F with 2 m integrating sphere; Standard Lamp by Labsphere.

3.2 Test data:

Sample No.	Luminous flux (lm)	Lamp Wattage (watt)	Luminous efficiency (lm per watt)
1	233.2	3.3	70.7
2	272.2	3.2	85.1
3	286.8	3.5	81.9
4	210.5	3.1	67.9
5	244.6	3.3	74.1

3.3 Test result:

Average luminous efficiency = 75.9 lm/watt

Maximum luminous efficiency = 85.1 lm/watt

----- End of test report -----

Tested by:

Vens Zhu

Reviewed by:

Kevin Bao

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