

# EDISON OPTO Laboratory Test Report

## IES LM-80-08

### MEASURING LUMEN MAINTENANCE OF LED LIGHT SOURCE

Report Number	Q140901
Test Sample	2T0301WW38000003
Rating	DC 100mA 1W
Normal CCT	2,700 K
Test Date	September 23, 2014 to June 9, 2015
Test Address	9F, NO.800, Chung-Cheng Rd., Chung-Ho Dist., New Taipei City 235, Taiwan
Test Standard	IES LM-80-08 Approved Method : Measuring Lumen Maintenance of Led Lighting Sources
Temp. Measure point	See page 3
Description of test equipment	See page 3
Test Engineer	Cloud Chen <i>Cloud chen</i>
Review By	Kenny Yen <i>Kenny yen</i>

Notes:

1. The test center executes the test operations with prudent manners. All the test results are detail stated in the report. All test service meet under the regulations of ISO/IEC 17025.
2. The report is only responsible to the assigned test. It shall not be any of the bases of Compliance judgments.
3. There are 12 pages in the test report (include the cover page). It is invalid when being used separately.
4. The test report is forbidden to reproduce in separate pages. The complete report copy is unrestricted.
5. The recorded contents in this report shall not be used as advertising, publications or merchandising purposes without written permissions by the test center.
6. Lumen maintenance(lm) uncertainty=1.601%(K=1.97) at 95% confidence level.
7. Chromaticity(x,y) uncertainty=0.000018 (K=2) at 95% confidence level.

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## EDISON OPTO Laboratory Test Report

According to section 3 item 7 and section 4 item 5 of ENERGY STAR® Program Guidance Regarding LED Package, LED Array and LED Module Lumen Maintenance Performance Data Supporting Qualification of Lighting Products, the test report also applies to the following products:

Part Number	Normal CCT	Watt	W/mm <sup>2</sup>
2T0301WW38000003	2700K/3000K/3500K	1	0.102
2T0301WWxx000xxx	2700K/3000K/3500K	1	0.102
2T0301NWxx000xxx	4000K	1	0.102
2T0301CWxx000xxx	5000K/5700K/6500K	1	0.102

# EDISON OPTO Laboratory Test Report

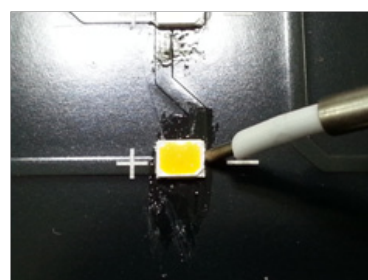
## 1. Test Summary

Case temperature (Ts)	83°C ≤ Ts	103°C ≤ Ts
Ambient conditions (T <sub>A</sub> )	80°C ≤ T <sub>A</sub> R.H. < 65 % Minimized airflow	100°C ≤ T <sub>A</sub> R.H. < 65 % Minimized airflow
Sample Size	22	22
Drive current of the LED	100mA	100mA
Initial flux (lm) / V <sub>f</sub> (V)	100.00 / 10.42	97.99 / 10.47
Lumen maintenance at 6,000 hrs	96.18% Page 5	94.29% Page 8
LED failure	0	0
Monitoring interval (hrs)	0,1000,2000,3000,4000,5000,6000	
Chromaticity shift	Page 7	Page 10

## 2. Case and ambient temperature

The case temperature T<sub>s</sub> is the temperature on the substrate; the ambient temperature T<sub>A</sub> is the temperature of the air at a distance of 50 mm above substrate.

Ts Measurement Point



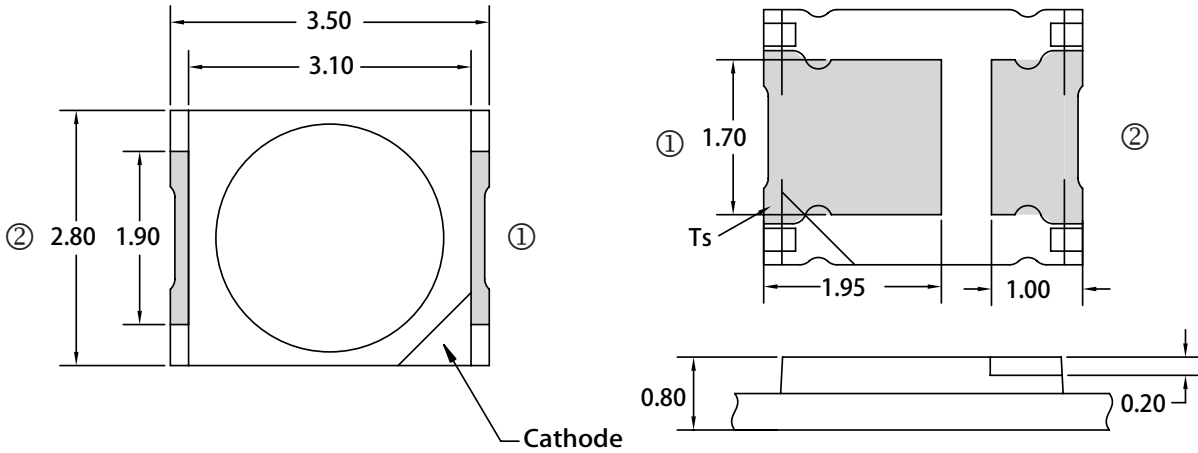
## 3. Description of test equipment

Equipment	Model No. / Serial No.	Cal. Laboratory	Report No.	Effective Date
Integrating sphere	ISP250 45392012	Standard Light Source L7386A	14-11-BAC-498- 01L	01.12.2015
DC power source	KEITHLEY 2425 1347276	SGS Taiwan Ltd.	ECAC1606814	16.06.2015
Temperature controlled test	VEKTREX/ SpikeSafe 200 1080030009	Tai Yi TAF-1625	T3503041401	26.03.2016
	VEKTREX/ ITCS 428		T3503041501	
	VEKTREX/ ITCS 429		T3503041502	
	VEKTREX/ ITCS 430		T3503041503	
	VEKTREX/ ITCS 454		T3503041504	

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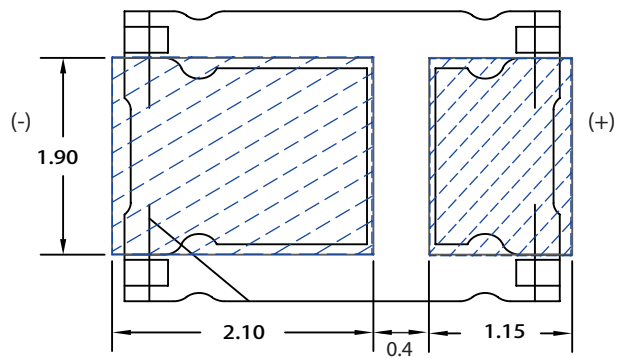
## Emitter Type Dimension



## Circuit



## Solder Pad



# EDISON OPTO Laboratory Test Report

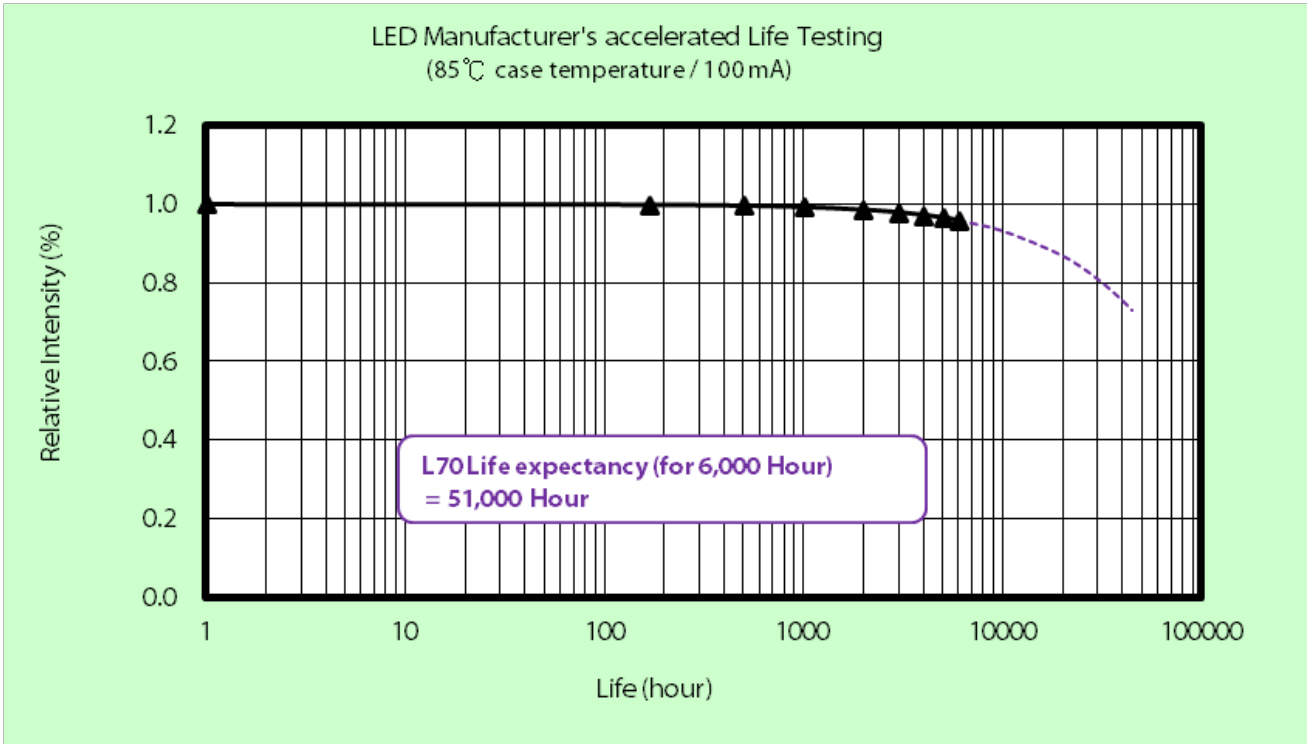
## 4. Test Results

### 4.1 Lumen and Color Maintenance data (85 °C)

#### ■ Lumen Maintenance data (85 °C)

No.	Im(Initial)	0h	1000h	2000h	3000h	4000h	5000h	6000h
1	99.38	1.000	0.989	0.986	0.979	0.973	0.965	0.957
2	102.91	1.000	0.981	0.983	0.983	0.976	0.971	0.965
3	101.45	1.000	0.996	0.993	0.996	0.989	0.982	0.974
4	100.86	1.000	0.999	0.992	0.988	0.975	0.970	0.964
5	100.92	1.000	0.998	0.995	0.999	0.987	0.982	0.980
6	97.13	1.000	0.987	0.983	0.987	0.981	0.980	0.975
7	101.50	1.000	0.991	0.991	0.974	0.971	0.958	0.950
8	98.12	1.000	1.009	1.004	1.001	0.995	0.988	0.979
9	100.67	1.000	0.996	0.999	1.001	0.993	0.985	0.975
10	99.77	1.000	1.003	1.003	0.998	0.990	0.978	0.964
11	102.39	1.000	1.002	1.001	1.001	0.996	0.980	0.971
12	100.34	1.000	0.997	0.993	0.969	0.963	0.952	0.949
13	99.83	1.000	0.993	0.987	0.972	0.963	0.962	0.954
14	96.41	1.000	0.994	0.993	0.975	0.969	0.955	0.946
15	95.87	1.000	0.991	0.984	0.970	0.960	0.949	0.942
16	101.12	1.000	1.004	1.003	0.997	0.987	0.979	0.973
17	98.97	1.000	0.994	0.993	0.970	0.967	0.952	0.941
18	99.24	1.000	1.005	0.997	0.993	0.981	0.975	0.969
19	101.46	1.000	1.002	1.000	0.989	0.977	0.967	0.960
20	101.12	1.000	0.983	0.978	0.982	0.972	0.967	0.961
21	98.94	1.000	0.988	0.979	0.977	0.971	0.969	0.962
22	101.61	1.000	0.984	0.982	0.966	0.963	0.952	0.946
AVG	100.00	1.000	0.995	0.992	0.985	0.977	0.969	0.962
MN	95.87	1.000	0.981	0.978	0.966	0.960	0.949	0.941
MAX	102.91	1.000	1.009	1.004	1.001	0.996	0.988	0.980

# EDISON OPTO Laboratory Test Report



Test Condition 1 - 85°C Case Temp	
Sample size	22
Number of failures	0
DUT drive current used in the test (mA)	100
Test duration (hours)	6,000
Test duration used for projection (hour to hour)	1,000 - 6,000
Tested case temperature (°C)	85
$\alpha$	7.044E-06
B	1.004
Calculated L70(6k) (hours)	51,000
Reported L70(6k) (hours)	>36000

# EDISON OPTO Laboratory Test Report

■ Color Maintenance data (85 °C)

$\Delta u'v'$

No.	CCT Initial	0h	1000h	2000h	3000h	4000h	5000h	6000h
1	2689.81	0	0.0004	0.0007	0.0011	0.0015	0.0020	0.0025
2	2773.05	0	0.0003	0.0007	0.0009	0.0014	0.0018	0.0023
3	2698.89	0	0.0003	0.0008	0.0011	0.0016	0.0021	0.0025
4	2739.96	0	0.0003	0.0006	0.0010	0.0014	0.0019	0.0023
5	2731.62	0	0.0004	0.0007	0.0011	0.0014	0.0019	0.0024
6	2573.39	0	0.0004	0.0008	0.0011	0.0015	0.0019	0.0025
7	2834.99	0	0.0003	0.0006	0.0010	0.0015	0.0019	0.0025
8	2551.59	0	0.0004	0.0007	0.0010	0.0014	0.0018	0.0023
9	2641.96	0	0.0003	0.0007	0.0011	0.0015	0.0020	0.0025
10	2750.79	0	0.0003	0.0008	0.0012	0.0017	0.0021	0.0025
11	2860.15	0	0.0005	0.0009	0.0013	0.0017	0.0022	0.0026
12	2797.72	0	0.0004	0.0009	0.0013	0.0017	0.0022	0.0027
13	2643.60	0	0.0003	0.0007	0.0011	0.0016	0.0021	0.0025
14	2587.43	0	0.0003	0.0007	0.0011	0.0015	0.0020	0.0024
15	2584.62	0	0.0004	0.0008	0.0012	0.0017	0.0021	0.0026
16	2756.68	0	0.0004	0.0008	0.0011	0.0015	0.0020	0.0024
17	2742.91	0	0.0004	0.0007	0.0012	0.0017	0.0021	0.0025
18	2676.44	0	0.0004	0.0008	0.0012	0.0017	0.0021	0.0026
19	2828.17	0	0.0004	0.0008	0.0012	0.0017	0.0021	0.0026
20	2669.24	0	0.0003	0.0009	0.0012	0.0016	0.0020	0.0026
21	2644.62	0	0.0003	0.0007	0.0011	0.0016	0.0020	0.0024
22	2744.45	0	0.0004	0.0008	0.0012	0.0017	0.0021	0.0025
AVG	2705.55	0	0.0004	0.0008	0.0011	0.0016	0.0020	0.0025
MN	2551.59	0	0.0003	0.0006	0.0009	0.0014	0.0018	0.0023
MAX	2860.15	0	0.0005	0.0009	0.0013	0.0017	0.0022	0.0027

## EDISON OPTO Laboratory Test Report

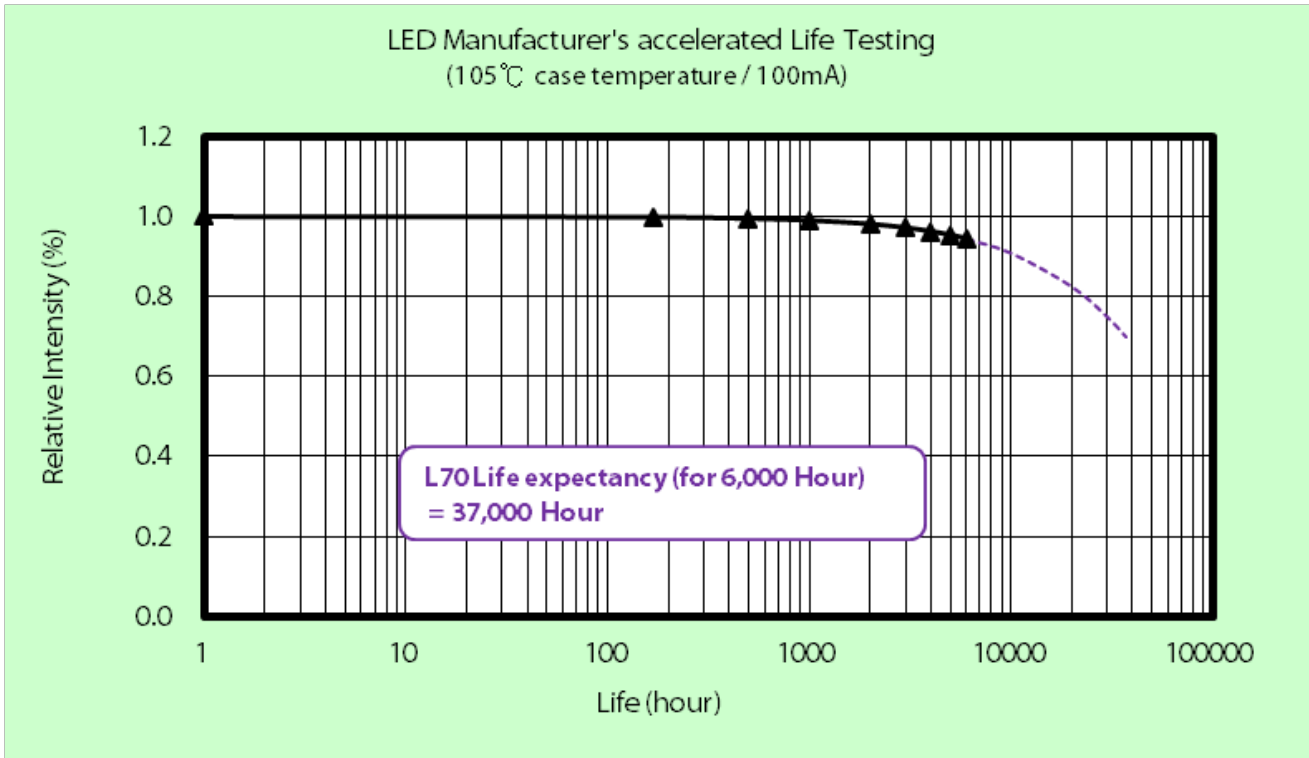
### 4.2 Lumen and Color Maintenance data (105 °C)

#### ■ Lumen Maintenance data (105 °C)

No.	Im(Initial)	0h	1000h	2000h	3000h	4000h	5000h	6000h
1	95.12	1.000	0.978	0.968	0.967	0.962	0.956	0.942
2	98.38	1.000	0.983	0.962	0.945	0.933	0.924	0.908
3	99.54	1.000	0.995	0.987	0.976	0.964	0.961	0.943
4	97.62	1.000	1.006	1.005	0.997	0.985	0.978	0.963
5	98.83	1.000	0.982	0.991	0.977	0.969	0.962	0.948
6	97.47	1.000	0.976	0.968	0.959	0.948	0.943	0.925
7	98.90	1.000	0.988	0.974	0.959	0.950	0.944	0.926
8	98.31	1.000	1.001	1.017	1.010	1.002	0.996	0.980
9	99.90	1.000	0.994	0.989	0.985	0.982	0.979	0.972
10	94.42	1.000	0.990	0.971	0.963	0.953	0.945	0.929
11	96.15	1.000	0.997	0.993	0.982	0.968	0.964	0.949
12	95.52	1.000	1.024	1.017	1.010	1.000	0.998	0.980
13	100.01	1.000	0.995	0.987	0.978	0.968	0.959	0.946
14	98.03	1.000	0.983	0.986	0.975	0.961	0.957	0.938
15	99.22	1.000	0.989	0.983	0.969	0.959	0.951	0.938
16	95.12	1.000	0.987	0.983	0.970	0.959	0.951	0.936
17	98.80	1.000	0.990	0.976	0.963	0.950	0.944	0.929
18	102.79	1.000	0.976	0.969	0.959	0.944	0.939	0.928
19	95.87	1.000	0.998	1.015	1.006	0.992	0.989	0.972
20	100.04	1.000	0.988	0.983	0.971	0.960	0.953	0.941
21	98.24	1.000	0.981	0.966	0.954	0.941	0.932	0.921
22	97.59	1.000	0.988	0.981	0.969	0.956	0.951	0.933
AVG	97.99	1.000	0.990	0.985	0.975	0.964	0.958	0.943
MN	94.42	1.000	0.976	0.962	0.945	0.933	0.924	0.908
MAX	102.79	1.000	1.024	1.017	1.010	1.002	0.998	0.980



# EDISON OPTO Laboratory Test Report



Test Condition 2 - 105°C Case Temp	
Sample size	22
Number of failures	0
DUT drive current used in the test (mA)	100
Test duration (hours)	6,000
Test duration used for projection (hour to hour)	1,000 - 6,000
Tested case temperature (°C)	105
$\alpha$	9.709E-06
B	1.002
Calculated L70(6k) (hours)	37,000
Reported L70(6k) (hours)	>36000

# EDISON OPTO Laboratory Test Report

■ Color Maintenance data (105 °C)

$\Delta u'v'$

No.	CCT Initial	0h	1000h	2000h	3000h	4000h	5000h	6000h
1	2565.30	0	0.0007	0.0011	0.0016	0.0021	0.0027	0.0033
2	2756.48	0	0.0005	0.0010	0.0015	0.0020	0.0025	0.0031
3	2737.11	0	0.0005	0.0011	0.0016	0.0020	0.0026	0.0031
4	2754.87	0	0.0004	0.0008	0.0014	0.0019	0.0024	0.0030
5	2745.99	0	0.0005	0.0010	0.0014	0.0019	0.0024	0.0030
6	2705.93	0	0.0006	0.0010	0.0015	0.0020	0.0025	0.0030
7	2753.24	0	0.0004	0.0009	0.0015	0.0021	0.0026	0.0031
8	2691.86	0	0.0006	0.0010	0.0014	0.0018	0.0022	0.0027
9	2826.43	0	0.0004	0.0009	0.0013	0.0018	0.0024	0.0030
10	2573.86	0	0.0004	0.0008	0.0013	0.0018	0.0023	0.0027
11	2595.57	0	0.0006	0.0011	0.0015	0.0020	0.0024	0.0030
12	2703.98	0	0.0006	0.0010	0.0014	0.0019	0.0023	0.0029
13	2672.71	0	0.0006	0.0010	0.0014	0.0018	0.0023	0.0028
14	2653.95	0	0.0004	0.0008	0.0013	0.0019	0.0025	0.0029
15	2636.77	0	0.0002	0.0006	0.0010	0.0015	0.0020	0.0025
16	2738.20	0	0.0003	0.0007	0.0013	0.0017	0.0022	0.0027
17	2677.46	0	0.0003	0.0008	0.0012	0.0016	0.0021	0.0026
18	2820.33	0	0.0005	0.0009	0.0014	0.0020	0.0024	0.0029
19	2610.21	0	0.0005	0.0009	0.0014	0.0018	0.0022	0.0028
20	2658.64	0	0.0004	0.0008	0.0013	0.0018	0.0022	0.0027
21	2704.58	0	0.0005	0.0009	0.0014	0.0018	0.0024	0.0029
22	2714.25	0	0.0005	0.0009	0.0014	0.0019	0.0024	0.0028
AVG	2695.35	0	0.0005	0.0009	0.0014	0.0019	0.0024	0.0029
MN	2565.30	0	0.0002	0.0006	0.0010	0.0015	0.0020	0.0025
MAX	2826.43	0	0.0007	0.0011	0.0016	0.0021	0.0027	0.0033

# EDISON OPTO Laboratory Test Report

## 5. TAF Recognized Laboratory

**實驗室/檢驗機構服務網 Laboratory & Inspection Body Accreditation**

[回首頁] [認可實驗室名錄] [認可檢驗機構名錄] [認證服務] [能力試驗] [合作(權責/學會)] [與我們聯絡] [FAQ]

**認可實驗室名錄**    前言    名單展開    查詢    暫時終止    延展認證    土木終止

**查詢**

認證內容關鍵字:

校正(測試)件名稱:     校正(測試)方法:

校正(測試)範圍:

實驗室認證編號: 2459    認證項目編號:

機構名稱:

實驗室名稱:

實驗室地址:

實驗室電話區碼: 請選取

實驗室服務方式: 請選取

技術類別: (×可複選)

音響  生物  化學  電性  游離輻射  營建  機械  非破壞  光學  溫度  鑑識科學(乙)

領域: 請選取

特定服務計畫: 請選取

報告簽署人:     實驗室主管:

找到1筆符合的資料，請點選編號查看認可詳細資料。

認證編號	機構名稱	實驗室名稱	聯絡人姓名	聯絡人電話	實驗室地址	實驗室狀態
2459	艾笛森光電股份有限公司	光電實驗室	顏敏純	(02)8227-6996 #5406	235 新北市中和區中正路800號9樓	認可

**Website :**

[http://service.taftw.org.tw/tafweb/CNLA/lab-directory\\_1.aspx](http://service.taftw.org.tw/tafweb/CNLA/lab-directory_1.aspx)

**Search methods :**

實驗室認證編號 → 2459

# EDISON OPTO Laboratory Test Report

## 6. EPA Recognized Certification Laboratory Information



**Partner Resources**

Home > Partner Resources > Third-Party Certification > EPA Recognized Certification Bodies (CBs) and Laboratories List Results

### EPA Recognized Certification Bodies (CBs) and Laboratories List Results

**NOTES:**

- Only accredited laboratories are listed on this page. Laboratories that are EPA-recognized through enrolling in a Certification Body's WMTL or SMTL program are not listed here.
- EPA encourages manufacturers to contact laboratories directly to ensure they have the capability and availability to test the particular products for which certification is sought, as some product types may require special testing equipment or capabilities. Manufacturers must also confirm with an EPA-recognized certification body (CB) that the laboratory is acceptable under the CB's program for that product type.
- Windows, Doors, and Skylights partners are advised to contact the National Fenestration Rating Council ([www.nfrc.org](http://www.nfrc.org)) for a complete list of EPA-recognized laboratories for these products.
- Lighting (CFLs, ILLs, Luminaires, and Decorative Light Strings) Labs and CBs are listed separately.
- Please note, EPA recognizes the Association of Home Appliance Manufacturers (AHAM) only for administering verification testing.
- For failure to meet its 2014 verification testing requirements and other program requirements, effective March 9, 2015, TUV SUD America, Inc. is not able to accept new clients for the ENERGY STAR program.

1 of 1 Show: 25 50 100 All

[New Search](#) [Refine Search](#)

Org. ID	Organization Name	Type of Recognized Body	If Lab is it 1st Party?	Programs	Organization Address	City	State	Country
1114690	Edison Opto Corporation - OPTO Testing Laboratory	Accredited Laboratory	Y	Luminaires	4F, NO.800, Chung-Cheng Rd., Chung-Ho Dist.,	New Taipei City		TW

1 of 1 Show: 25 50 100 All

[New Search](#) [Refine Search](#)

**Website :**

[http://www.energystar.gov/index.cfm?fuseaction=recognized\\_bodies\\_list.show\\_RCB\\_search\\_results](http://www.energystar.gov/index.cfm?fuseaction=recognized_bodies_list.show_RCB_search_results)

**Search methods :**

New Search→Company Name→Edison Opto

### About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at [www.edison-opto.com](http://www.edison-opto.com)

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[www.edison-opto.com](http://www.edison-opto.com)

For general assistance please contact:  
[service@edison-opto.com.tw](mailto:service@edison-opto.com.tw)

For technical assistance please contact:  
[LED.Detective@edison-opto.com.tw](mailto:LED.Detective@edison-opto.com.tw)

Report NO.Q140901