LCTECH

IESNA SUSTAINING MEMBER

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Test report of

IES LM-79-08

Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Rendered to:
LIGHT EFFICIENT DESIGN,DIV OF TADD LLC
188 S.Northwest Highway Cary, IL 60013.

For products:
LED Lamp

Models No.:
LED-8025E57,LED-8025E57C,LED-8025M57,LED-8025M57C

Test Date:	Oct. 30, 2015 to Oct. 31, 2015
Test Lab.:	LCTECH (Zhongshan) Testing Service Co.,Ltd 2/F.,Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China
Test Note:	*LED-8025E57,LED-8025E57C,LED-8025M57,LED-8025M57C are all the same except for model number and lamp base.This report is base on report LCGP15100117, they are all the same except for model number. Model LED-8025E57 is selected as the representative test sample.*

Complied by:		**Reviewed by:**	
Bowen Pang	Bowen Pang	**Richard Li**	
Project Engineer		**Technical Manager**	
Mar. 9, 2016		**Mar. 9, 2016**	

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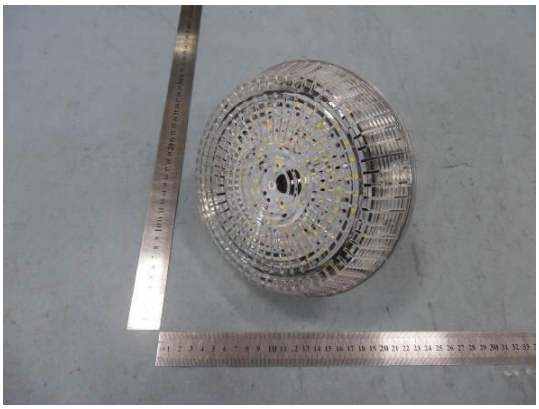
1. General

1.1 Product Information

Brand Name	Light Efficient Design
Trade Mark	-
Luminaire Type	LED Lamps
Model Number	LED-8025E57,LED-8025E57C,LED-8025M57,LED-8025M57C
Rated Inputs	120-277VAC 50-60Hz
Rated Power	52 W
Rated Light output	5800 lm
Declared CCT	5700 K
Power Supply	Integral LED driver
LED Package, Array or Module	Not provided
Receipt Samples	1 unit
Date of Receipt Samples	Oct. 29, 2015

Photo



Picture 1

Picture 2

1.2 Standards or methods

The following standards are partly or totally used or referenced for test:

No.	Name
ANSI/NEMA/ ANSLG C78.377-2011	Specifications for the Chromaticity of Solid State Lighting Products
ANSI C82.77-2002	Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment
CIE Pub. No. 13.3-1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. No. 15:2004	Colorimetry
IES LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products

1.3 Equipment list

Instrument	ID	Model name	Cal. date	Next cal. Date
AC Power supply	LC-I-923	CHP-500	2015-02-05	2016-02-04
AC Power supply	LC-I-987	APW-110N	2015-02-05	2016-02-04
Power analyzer	LC-I-928	WT210	2015-02-09	2016-02-08
Power analyzer	LC-I-954	WT210	2015-03-04	2016-03-03
Multimeter	LC-I-972	Fluke 17B	2015-08-17	2016-08-16
Photometric colorimetric electric system (2 meter sphere)	LC-I-900	SPR3000	Before use	Before use
Standard lamp	LC-I-917	24V100W	2015-10-09	2016-10-08
Luminous Flux Standard Lamp	LC-I-946	110V/200W	2015-10-09	2016-10-08
Goniophotometer(with mirror)	LC-I-902	GMS2000	2012-05-10	2016-05-09
Wireless temperature transmitter	LC-I-978	DWRF-B	2015-02-11	2016-02-10
Wireless temperature transmitter	LC-I-979	DWRF-B	2015-02-11	2016-02-10

2. Test conducted and method

2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at 25 °C ± 1°C; the air flow around the sample(s) being tested did not affect the performance.

2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within±0.2 percent under load.

2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

2.4 Electrical Instrumentation

The calibration uncertainties of the instruments for AC voltage and current were less than 0.2 percent, and the calibration uncertainty of the AC power meter was less than 0.5 percent(95 % confidence interval, k=2).

2.5 Color Measurement Method

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the color characteristics (Color rendering index, correlated color temperature, chromaticity coordinate) were calculated from these by software automatically.

2.6 Total Luminous Flux Measurement Method

Total luminous flux was measured by sphere-spectroradiometer system and type C goniophotometer system.

Light intensity distribution was measured by a type C goniophotometer (with mirror) which can keep the sample in burn position when the tests conduct, and the total luminous flux was calculated from the intensity data by software automatically.

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the total luminous flux was calculated from these by software automatically.

2.7 Luminous Intensity Distribution Measurement Method

Luminous intensity distribution was measured by a mirror-type goniophotometer (Type C) which can keep the sample in burn position when the tests conduct, and the kinds of graph were generated by software automatically.

2.8 Spatial Non-uniformity of Chromaticity

The customer did not require this measurement.

3. Test Result Summary

3.1 Electrical data

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Input Voltage & Frequency	277.00V~60Hz	277.02V~60Hz
Input Current(A)	0.200	0.202
Total Power(W)	52.22	52.71
Power Factor	0.945	0.940
I-THD	14.19%	-

3.2 Photometric data

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Total Lumens(lm)	5773.90	5786.40
Luminaire Efficacy(lm/W)	110.57	109.78
Correlated Color Temperature (CCT)(K)	5435	-
Color Rendering Index (CRI)	85.6	-
R9	27	-
Chromaticity Coordinate (x,y)	x = 0.3339 y = 0.3408	-
Chromaticity Coordinate (u,v)	u = 0.2080 v = 0.2984	-
Chromaticity Coordinate (u',v')	u' = 0.2080 v' = 0.4776	-
Duv	-0.000778	-
Beam Angle	-	C0 plan: 94.76°
Filed Angle	-	C0 plan: 209.6°

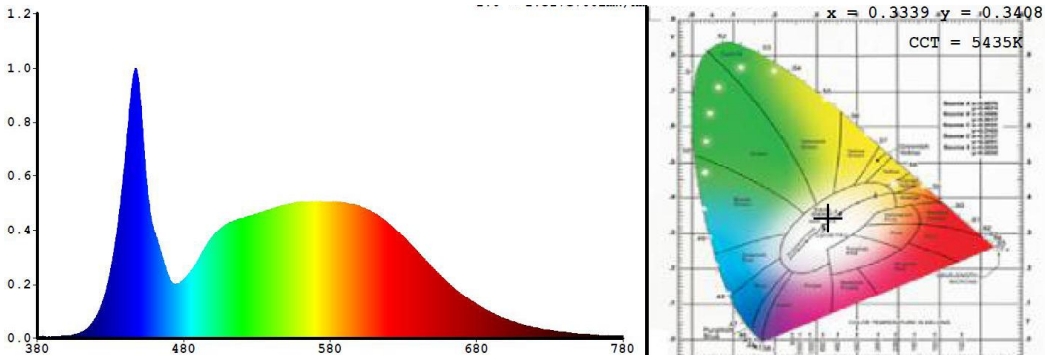
3.3 Color Rendering Details

R1	R2	R3	R4	R5	R6	R7	R8
86	88	90	87	87	84	88	75
R9	R10	R11	R12	R13	R14	R15	-
27	72	88	71	86	94	82	-

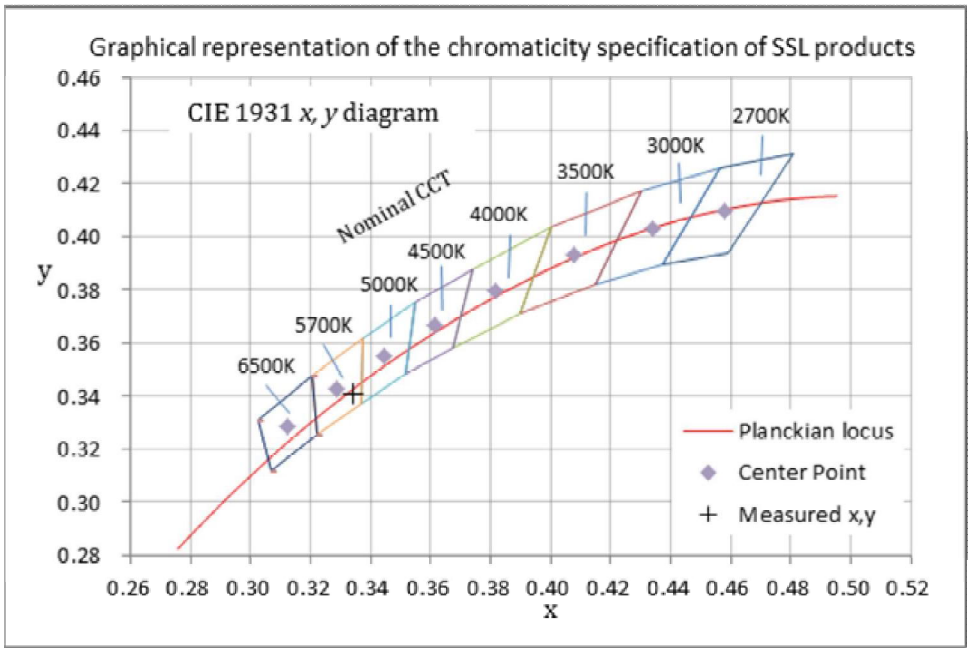
Note: N.A.

4. Test Data

4.1 Spectral Distribution



4.2 ANSI Chromaticity Quadrangles Diagram



4.3 Goniometry Test Data

CIE Type	Semi-Direct	Basic Luminous Shape	Circular w/Sides
Spacing Criteria (0-180)	1.08	Luminous Length	0.20(Diameter)
Spacing Criteria (90-270)	1.12	Luminous Width	0.20(Diameter)
Spacing Criteria (Diagonal)	1.26	Luminous Height	0.04m
Test Distance	30.04 m		

4.4 Zonal Lumen Summary

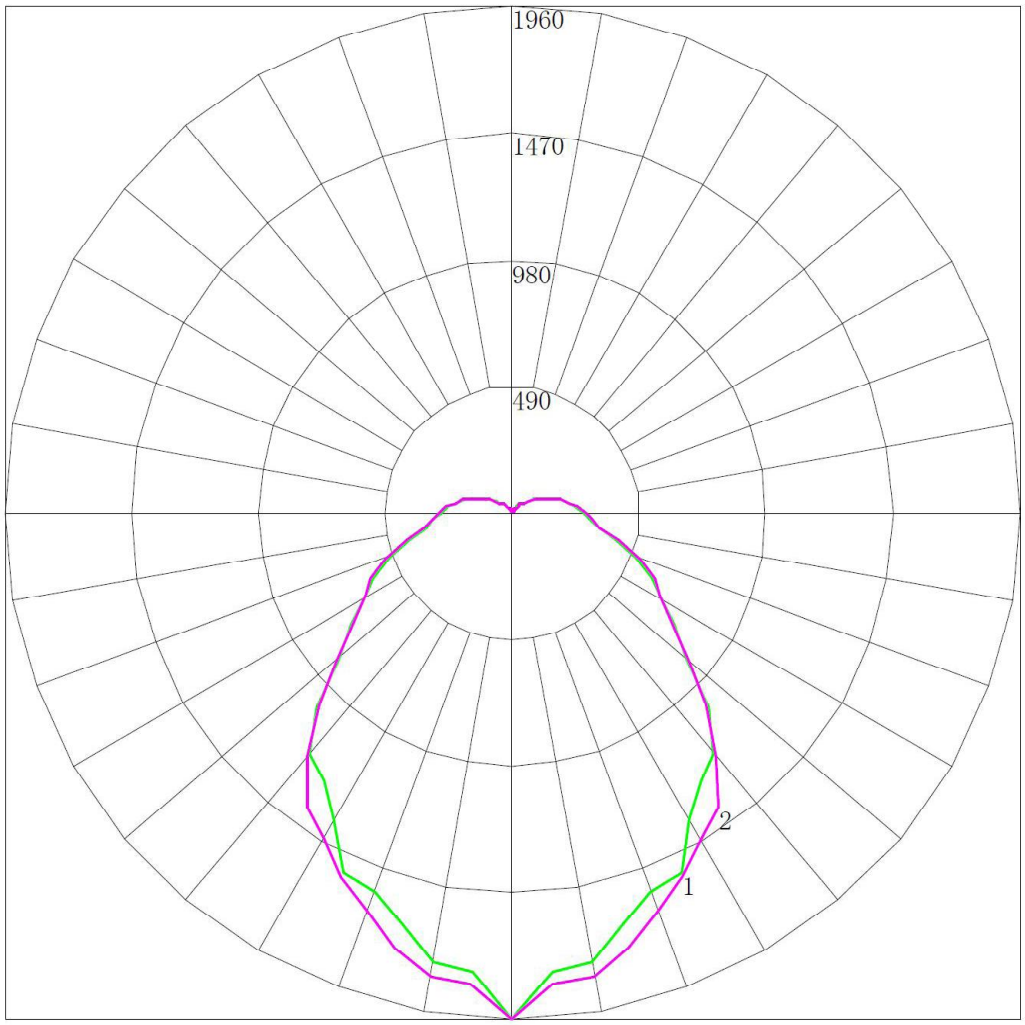
Zone	Lumens	%Lamp	%Fixt
0-20	650.58	11.20	11.20
0-30	1351.03	23.30	23.30
0-40	2181.83	37.70	37.70
0-60	3668.37	63.40	63.40
0-80	4704.89	81.30	81.30
0-90	5037.95	87.10	87.10
10-90	4864.43	84.10	84.10
20-40	1531.25	26.50	26.50
20-50	2344.24	40.50	40.50
40-70	2076.88	35.90	35.90
60-80	1036.52	17.90	17.90
70-80	446.18	7.70	7.70
80-90	333.07	5.80	5.80
90-110	474.05	8.20	8.20
90-120	604.35	10.40	10.40
90-130	676.38	11.70	11.70
90-150	737.64	12.70	12.70
90-180	748.45	12.90	12.90
110-180	274.40	4.70	4.70
0-180	5786.4	100.00	100.00

Total Luminaire Efficiency = 100.00%

ZONAL LUMEN SUMMARY

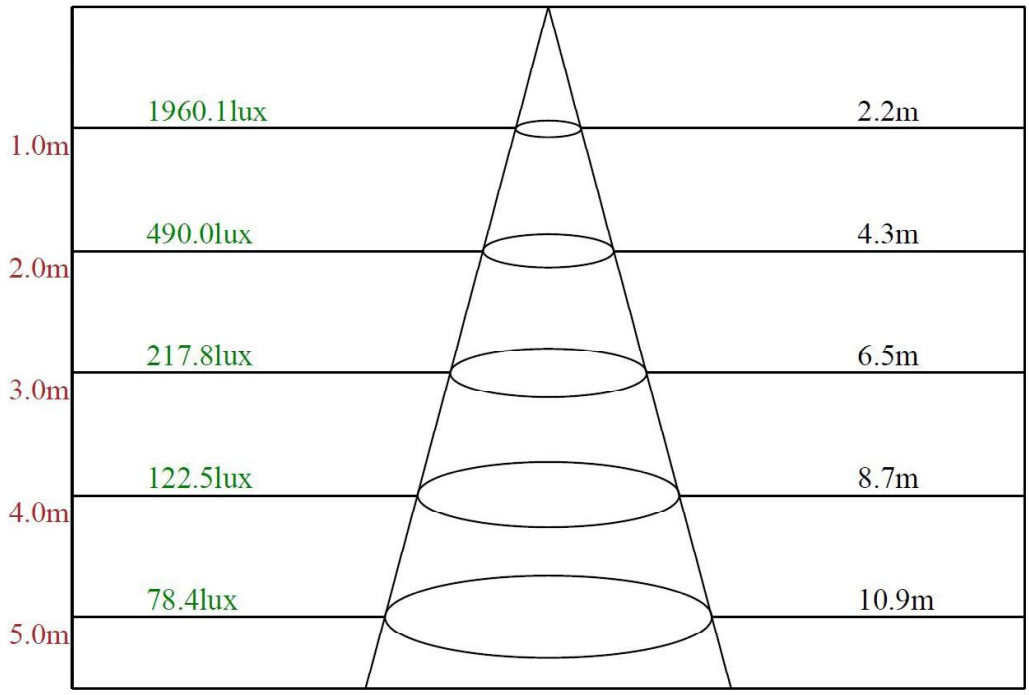
Zone	Lumens
0-10	173.53
10-20	477.06
20-30	700.44
30-40	830.80
40-50	813.00
50-60	673.54
60-70	590.34
70-80	446.18
80-90	333.07
90-100	268.21
100-110	205.84
110-120	130.30
120-130	72.03
130-140	39.23
140-150	22.03
150-160	6.91
160-170	3.02
170-180	0.87

4.5 Polar Curves



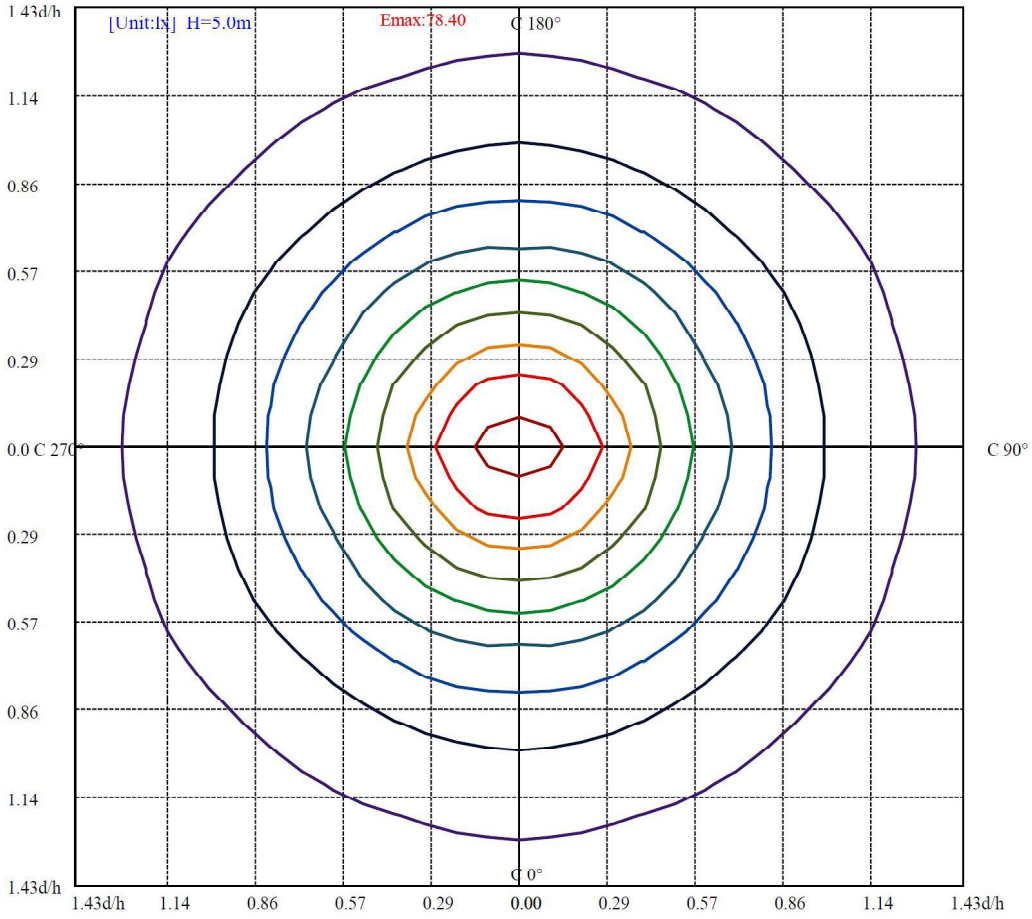
Maximum Candela = 1960.091 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180)
2 - Vertical Plane Through Horizontal Angles (90 - 270)

4.6 Lux Distance curve



Beam angle of C0plane94.76

4.7 ISO illuminance diagram



(10%Emax) 7.84036
(20%Emax) 15.68068
(30%Emax) 23.52104
(40%Emax) 31.3614
(50%Emax) 39.20172
(60%Emax) 47.042
(70%Emax) 54.8824
(80%Emax) 62.7228
(90%Emax) 70.5632

4.8 Candela Tabulation

	0	15	30	45	60	75	90
0	1960.091	1960.091	1960.091	1960.091	1960.091	1960.091	1960.091
5	1789.300	1792.107	1797.145	1795.729	1805.669	1819.727	1839.499
10	1770.846	1773.446	1773.793	1784.016	1791.243	1809.727	1828.548
15	1652.282	1684.860	1686.434	1698.338	1670.164	1723.312	1744.381
20	1561.623	1579.144	1590.798	1585.151	1564.523	1610.527	1640.741
25	1541.780	1522.789	1526.516	1526.463	1556.783	1541.098	1557.214
30	1376.498	1394.150	1404.644	1401.682	1415.714	1408.874	1459.302
35	1268.550	1327.478	1348.461	1343.406	1301.994	1361.184	1390.529
40	1215.920	1224.831	1206.006	1217.614	1236.366	1235.013	1228.379
45	1072.183	1052.472	1040.550	1048.608	1087.204	1068.918	1058.715
50	876.442	853.722	870.953	858.139	892.533	858.745	893.404
55	761.775	728.616	733.065	729.842	763.284	737.761	749.994
60	655.394	650.540	653.191	654.219	669.104	659.235	654.326
65	597.927	601.014	610.999	605.883	606.802	610.033	609.150
70	507.492	505.298	510.321	508.547	515.725	517.127	525.486
75	415.400	411.992	410.066	416.401	430.634	424.915	424.412
80	336.208	333.690	333.763	338.432	344.882	341.384	345.284
85	303.510	300.444	301.702	302.920	301.723	302.400	304.002
90	276.500	274.153	283.417	274.174	280.155	275.589	286.591
95	244.384	236.273	239.894	234.282	244.025	240.519	255.618
100	221.406	219.076	224.408	221.641	229.289	222.760	223.225
105	191.754	194.106	192.395	195.952	193.834	196.010	194.589
110	163.580	166.931	166.402	168.491	162.619	166.821	164.486
115	125.417	127.859	127.909	126.113	126.546	129.455	128.153
120	98.587	102.753	103.691	103.492	101.943	104.587	104.969
125	77.400	78.591	78.412	77.185	78.311	78.162	81.235
130	60.021	60.233	59.945	59.461	61.036	59.640	60.938
135	48.644	48.263	48.756	48.759	49.817	49.025	49.117
140	43.896	43.981	43.185	43.722	43.735	44.707	44.627
145	35.386	36.001	35.590	36.144	36.206	36.298	35.646
150	23.471	23.291	23.187	22.781	23.178	23.093	23.184
155	12.139	12.105	11.953	12.031	12.121	12.251	12.783
160	11.288	11.208	11.212	10.997	11.103	11.273	11.134
165	10.795	10.850	10.785	10.660	10.809	10.773	10.859
170	9.675	9.774	9.751	9.625	9.656	9.705	9.713
175	8.734	8.698	8.740	8.681	8.774	8.796	8.843
180	8.675	8.675	8.675	8.675	8.675	8.675	8.675

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