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**Test report of
IES LM-79-08**

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

Rendered to:

Elec-Tech International Co., Ltd.

No.1 Jinfeng Road, Tangjiawan Town, Xiangzhou District, Zhuhai
City, Guangdong Province, P.R.China

For products:

SSL Downlight Retrofit Kits

Models No.:

531851XX

(Where "XX" denotes CCT, 01-10 identifies 2700K, 41-50 identifies 4000K)

Test Date: Jan. 30, 2016 to Jan. 31, 2016

Test Lab.: LCTECH (Zhongshan) Testing Service Co.,Ltd

2/F.,Technology and Enterprise Development Center, Guangyuan Road, Xiaolan,
Zhongshan, Guangdong, China

Test Note: *Alter the rated light output. And report version V1.0 is invalid.*

Complied by:

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Mar. 9, 2016

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Mar. 9, 2016

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1. General

1.1 Product Information

Brand Name	ETI, Commercial Electric
Trade Mark	-
Product Type	SSL Downlight Retrofit Kits
Model Number	531851XX
Rated Inputs	120VAC 60Hz
Rated Power	10 w
Rated Light output	625 lm
Declared CCT	2700 K, 4000 K
Power Supply	LED Driver, model: not provided
LED Package, Array or Module	67-21S Series
Receipt Samples	1 unit
Date of Receipt Samples	Jan. 30, 2016
Note	Model 531851XX has Three operation modes (2700K, 3500K and 4000K) by two lighting sources only different color temperature, using a switch control unit to realize control.

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	2015-02-08	2016-02-08
Power analyzer	LC-I-954	WT210	2015-03-04	2016-03-04
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	2015-10-17	2016-10-16
Goniophotometer(with mirror)	LC-I-902	GMS2000	2012-05-07	2016-05-07
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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$; 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 goniophotometer.

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

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 total luminous flux was calculated from the intensity data 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

Test mode: 2700K

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Input Voltage & Frequency	120.02V~60Hz	120.00V~60Hz
Input Current(A)	0.085	0.083
Total Power(W)	9.48	9.40
Power Factor	0.935	0.945
Off-state Power(W)	-	-

Test mode: 4000K

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Input Voltage & Frequency	120.00V~60Hz	-
Input Current(A)	0.084	-
Total Power(W)	9.44	-
Power Factor	0.935	-
Off-state Power(W)	-	-

3.2 Photometric data

Test mode: 2700K

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Total Lumens(lm)	676.30	672.94
Luminaire Efficacy(lm/W)	71.34	71.59
Correlated Color Temperature (CCT)(K)	2667	-
Color Rendering Index (CRI)	90.0	-
R9	43	-
Chromaticity Coordinate (x,y)	x=0.4637 y=0.4130	-
Chromaticity Coordinate (u,v)	u=0.2639 v=0.3525	-
Chromaticity Coordinate (u',v')	u'=0.2639 v'=0.5288	-
Duv	0.00059	-
Spacing Criteria(0-180°)	-	1.22
Spacing Criteria(90-270°)	-	1.22
Beam angle(°)	-	105.1
Center Beam Intensity(cd)	-	268.54
Zonal lumens in the 0°-60°zone	-	84.7%
Zonal lumens in the 60°-90°zone	-	15.2%
Zonal lumens in the 90°-120°zone	-	0.0%
Zonal lumens in the 120°-180°zone	-	0.2%

Test mode: 4000K

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Total Lumens(lm)	715.09	-
Luminaire Efficacy(lm/W)	75.75	-
Correlated Color Temperature (CCT)(K)	4051	-
Color Rendering Index (CRI)	92.5	-
R9	72	-
Chromaticity Coordinate (x,y)	x=0.3771 y=0.3710	-
Chromaticity Coordinate (u,v)	u=0.2252 v=0.3323	-
Chromaticity Coordinate (u',v')	u'=0.2252 v'=0.2252	-
Duv	-0.0017	-
Spacing Criteria(0-180°)	-	-
Spacing Criteria(90-270°)	-	-
Beam angle(°)	-	-
Center Beam Intensity(cd)	-	-
Zonal lumens in the 0°-60°zone	-	-
Zonal lumens in the 60°-90°zone	-	-
Zonal lumens in the 90°-120°zone	-	-
Zonal lumens in the 120°-180°zone	-	-

3.3 Color Rendering Details

Test mode: 2700K

R1	R2	R3	R4	R5	R6	R7	R8
90	97	95	89	90	97	88	75
R9	R10	R11	R12	R13	R14	R15	-
43	93	89	84	92	98	84	-

Test mode: 4000K

R1	R2	R3	R4	R5	R6	R7	R8
96	99	96	88	92	95	89	85
R9	R10	R11	R12	R13	R14	R15	-
72	99	89	70	98	99	93	-

Note: N.A.



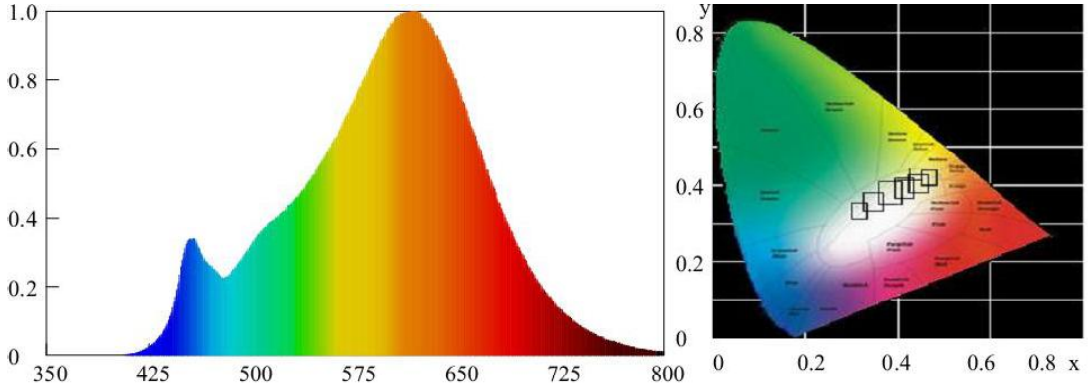
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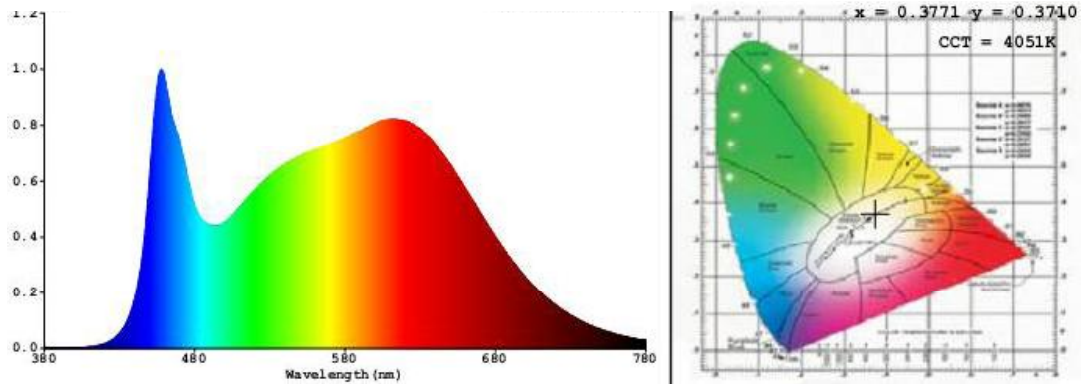
4. Test Data

4.1 Spectral Distribution

Test mode: 2700K



Test mode: 4000K



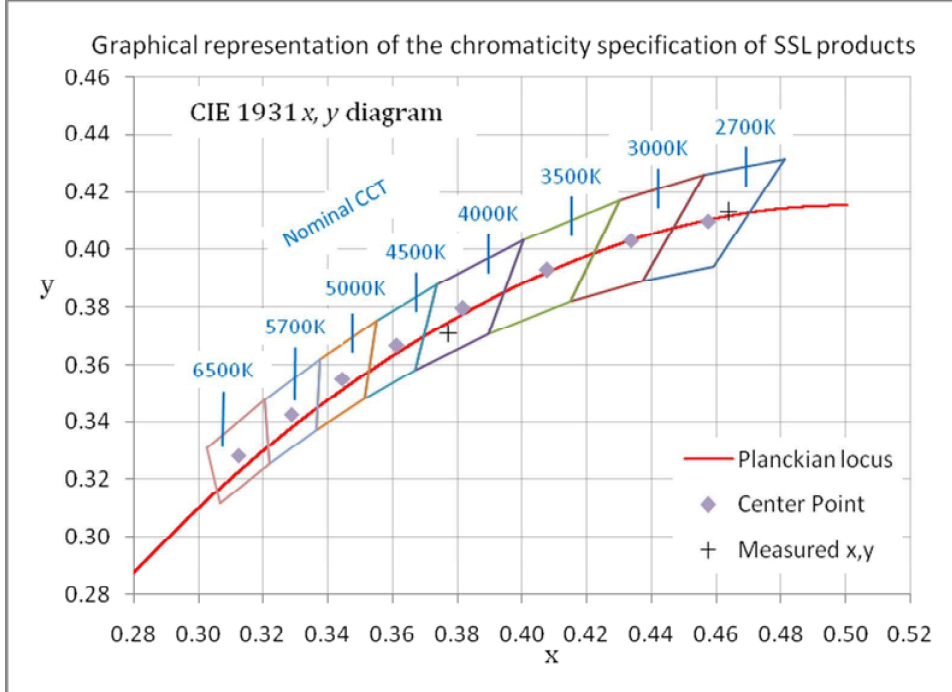


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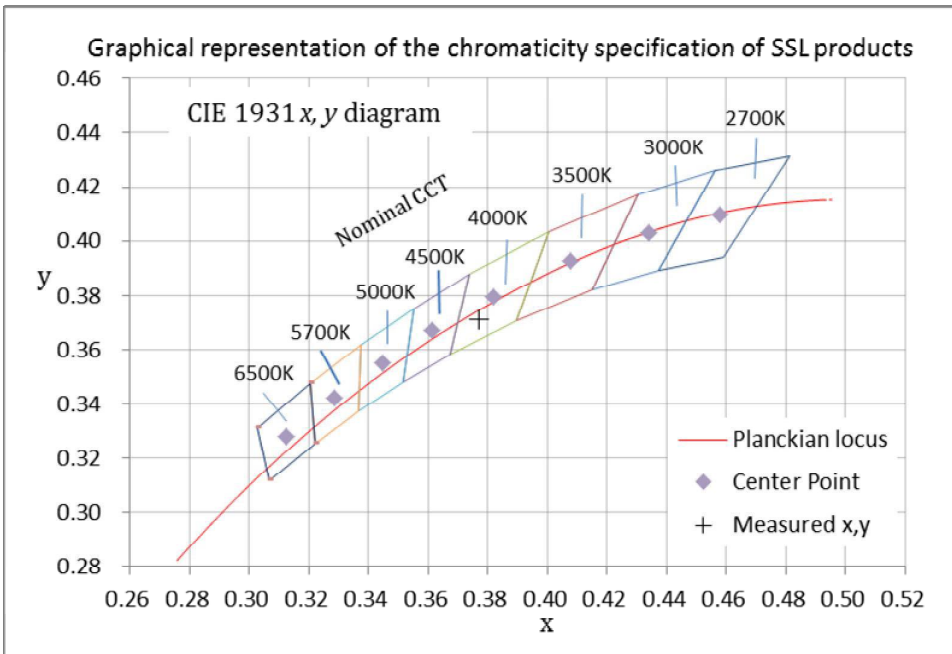


4.2 ANSI Chromaticity Quadrangles Diagram

Test mode: 2700K



Test mode:4000K





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4.3 Goniometry Test Data

Test mode: 2700K

CIE Type	Direct	Basic Luminous Shape	Circular
Spacing Criteria (0-180)	1.22	Luminous Length	0.09 m(Diameter)
Spacing Criteria (90-270)	1.22	Luminous Width	0.09 m(Diameter)
Spacing Criteria (Diagonal)	1.34	Luminous Height	0.00 m
Test Distance	29.68 m		

4.4 Zonal Lumen Summary

Test mode: 2700K

Zone	Lumens	%Lamp	%Fixt
0-20	97.39	14.50	14.50
0-30	204.93	30.50	30.50
0-40	332.19	49.40	49.40
0-60	570.18	84.70	84.70
0-80	668.88	99.40	99.40
0-90	672.07	99.90	99.90
10-90	646.70	96.10	96.10
20-40	234.79	34.90	34.90
20-50	363.38	54.00	54.00
40-70	310.23	46.10	46.10
60-80	98.70	14.70	14.70
70-80	26.47	3.90	3.90
80-90	3.19	0.50	0.50
90-110	0.13	0.00	0.00
90-120	0.20	0.00	0.00
90-130	0.30	0.00	0.00
90-150	0.49	0.10	0.10
90-180	0.89	0.10	0.10
110-180	0.76	0.10	0.10
0-180	672.96	100.00	100.00

Total Luminaire Efficiency = 100.00%

ZONAL LUMEN SUMMARY

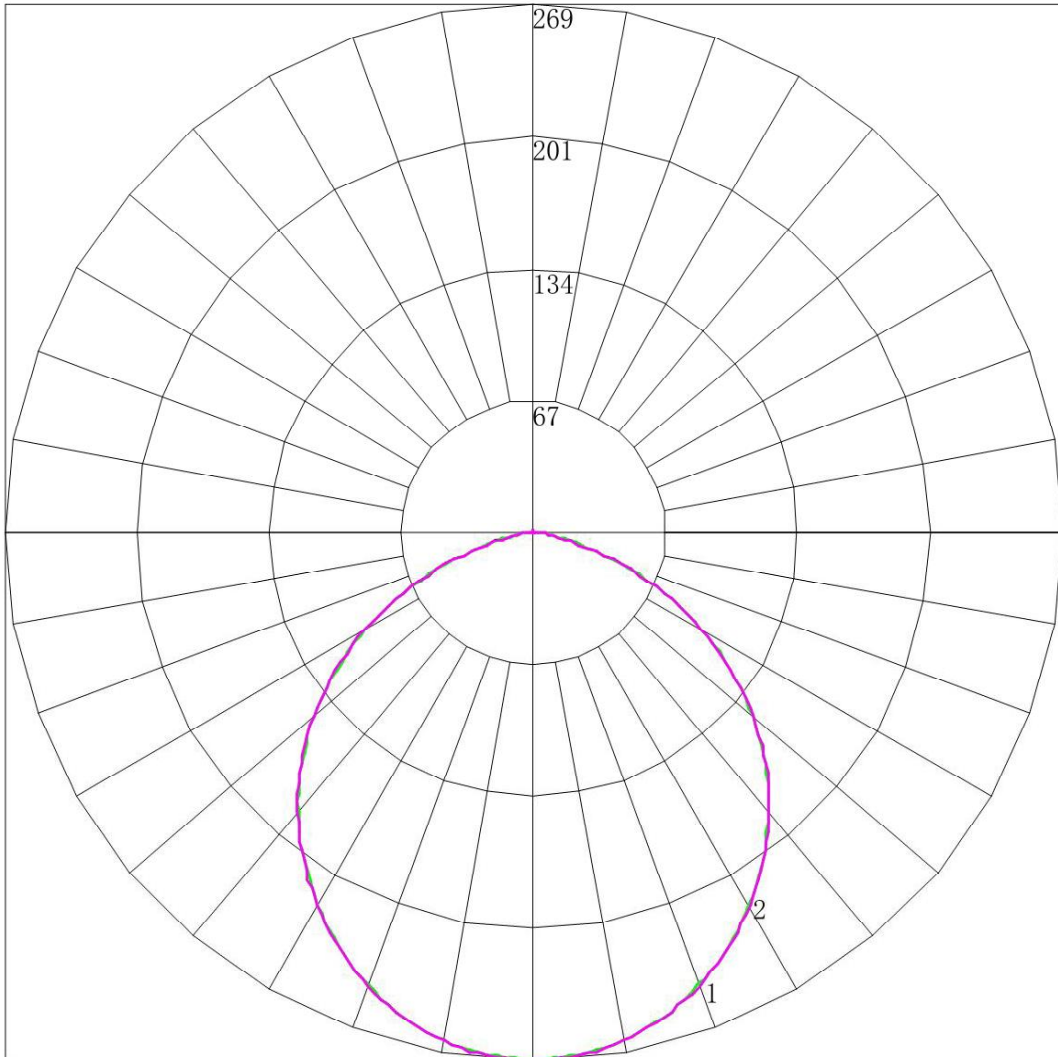
Zone	Lumens
0-10	25.37
10-20	72.02
20-30	107.53
30-40	127.26
40-50	128.59
50-60	109.40
60-70	72.23
70-80	26.47
80-90	3.19
90-100	0.07
100-110	0.06
110-120	0.07
120-130	0.09
130-140	0.10
140-150	0.10
150-160	0.15
160-170	0.17
170-180	0.07



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4.5 Polar Curves

Test mode: 2700K



Maximum Candela = 268.601 Located At Horizontal Angle = 60, Vertical Angle = 1
1 - Vertical Plane Through Horizontal Angles (0 - 180)
2 - Vertical Plane Through Horizontal Angles (90 - 270)



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4.6 Candela Tabulation

Test mode: 2700K

	<u>0</u>	<u>15</u>	<u>30</u>	<u>45</u>	<u>60</u>	<u>75</u>	<u>90</u>
0	268.536	268.536	268.536	268.536	268.536	268.536	268.536
1	268.271	268.448	268.448	268.536	268.601	268.558	268.361
2	268.007	268.337	268.426	268.228	268.447	268.338	268.449
3	267.698	268.072	268.007	268.007	268.050	267.744	268.230
4	267.301	267.697	267.521	267.544	267.742	267.634	267.750
5	266.816	267.102	267.058	267.037	267.059	267.105	267.314
6	266.066	266.308	266.463	266.354	266.486	266.313	266.572
7	265.493	265.646	265.691	265.627	265.802	265.851	266.092
8	264.435	264.719	264.720	264.811	264.855	264.662	265.045
9	263.553	265.447	265.100	264.579	265.457	265.204	264.085
10	262.451	262.667	262.515	262.630	262.695	262.638	262.819
11	261.172	261.366	261.346	261.373	261.526	261.383	261.467
12	259.893	260.086	259.979	260.029	260.249	259.975	260.201
13	258.350	258.608	258.677	258.596	258.772	258.522	258.849
14	256.674	257.086	257.156	256.943	257.339	256.982	257.234
15	255.087	255.387	255.391	255.224	255.620	255.484	255.707
16	253.411	253.556	253.671	253.549	253.791	253.747	253.743
17	251.471	251.791	251.664	251.742	251.873	251.986	251.867
18	249.928	249.761	249.966	249.626	250.154	249.962	250.121
19	247.635	247.820	247.761	247.708	247.994	247.760	248.027
20	245.342	245.702	245.445	245.681	245.746	245.494	245.889
21	243.137	243.452	243.261	243.345	243.300	243.491	243.663
22	240.844	241.267	240.813	240.986	241.030	240.740	240.914
23	238.375	238.554	238.652	238.341	238.627	238.583	238.776
24	235.729	236.149	236.028	235.983	236.027	236.229	236.114
25	233.437	233.413	233.425	233.316	233.624	233.477	233.758
26	230.394	230.722	230.624	230.605	230.671	230.815	230.878
27	227.969	228.229	228.022	227.982	228.202	228.086	228.391
28	225.147	225.096	225.132	225.095	225.337	225.182	225.554
29	222.281	222.515	222.243	222.252	222.185	222.363	222.587
30	219.238	219.492	219.487	219.453	219.607	219.504	219.751
31	216.107	216.470	216.134	216.323	216.125	216.400	216.304
32	212.933	213.293	213.223	213.260	213.458	213.186	213.598
33	210.110	210.138	210.091	210.086	210.041	210.282	210.500
34	206.318	206.983	206.673	206.648	206.802	206.826	207.096
35	203.585	203.608	203.585	203.188	203.672	203.591	203.736
36	200.145	200.210	200.167	200.278	200.168	200.444	200.333
37	196.750	196.504	196.726	196.377	196.971	196.746	197.060
38	193.002	193.063	192.955	193.225	193.137	193.468	193.220
39	189.783	189.753	189.779	189.610	189.831	189.573	189.947
40	185.770	186.003	185.854	185.974	186.061	186.030	186.369
41	182.463	182.495	182.523	182.514	182.513	182.486	182.442
42	178.539	178.568	178.818	178.701	178.899	178.789	179.126
43	174.526	175.038	174.716	174.998	174.799	174.893	175.155
44	170.734	171.111	171.077	171.009	171.185	171.042	171.402
45	166.854	167.184	167.041	167.064	167.173	167.235	167.300
46	162.444	162.948	162.564	162.634	162.898	162.834	163.111
47	158.344	158.801	158.550	158.601	158.820	158.872	159.097
48	154.463	154.476	154.492	154.413	154.435	154.647	154.471
49	150.054	149.733	150.125	149.961	150.115	150.069	150.544
50	145.203	145.740	145.494	145.641	145.597	145.822	145.657
51	141.147	140.886	141.215	140.814	141.255	141.133	141.642
52	136.517	136.320	136.782	136.429	136.714	136.623	136.973
53	131.887	131.709	132.040	131.557	132.218	131.912	131.999
54	127.389	127.010	127.188	127.194	127.303	127.358	127.373



CANDELA TABULATION - (Cont.)

55	122.495	122.730	122.734	122.719	122.675	122.758	122.879
56	117.865	117.854	118.036	117.761	118.046	117.873	118.297
57	112.970	113.221	113.140	113.176	113.021	113.273	113.366
58	107.899	108.014	107.957	107.909	108.415	108.277	108.130
59	103.490	103.448	103.480	103.457	103.323	103.568	103.635
60	98.110	98.395	98.341	98.233	98.453	98.197	98.355
61	93.613	93.277	93.622	93.208	93.670	93.421	93.599
62	88.145	88.424	88.417	88.249	88.447	88.206	88.276
63	83.515	83.239	83.477	83.180	83.576	83.166	83.607
64	78.444	78.165	78.470	78.088	78.308	78.501	78.632
65	73.373	73.444	73.376	73.196	73.371	72.933	73.439
66	68.126	67.928	68.016	68.017	68.257	68.048	68.683
67	62.658	63.097	62.701	63.057	62.748	63.118	63.185
68	57.896	57.669	57.717	57.790	57.833	57.749	57.992
69	52.252	52.683	52.335	52.786	52.544	52.862	52.974
70	47.181	47.433	47.417	47.298	47.629	47.426	47.825
71	42.463	42.535	42.565	42.714	42.824	42.871	42.851
72	37.039	37.505	37.471	37.799	37.755	37.852	37.658
73	32.630	32.497	32.817	32.773	33.148	33.055	33.163
74	27.956	27.952	28.119	28.277	28.322	28.610	28.232
75	23.546	23.452	23.797	23.736	24.112	24.120	24.174
76	19.137	19.348	19.452	19.550	19.792	20.248	19.723
77	15.918	15.951	16.056	16.266	16.398	16.573	16.276
78	12.611	12.575	12.681	12.828	13.180	13.096	13.222
79	9.921	9.928	9.880	10.117	10.139	10.433	10.124
80	7.717	7.589	7.918	7.780	8.155	8.078	7.767
81	5.997	6.023	6.087	6.172	6.304	6.340	6.109
82	4.586	4.611	4.676	4.673	4.805	4.930	4.756
83	3.704	3.750	3.793	3.835	3.857	3.874	3.665
84	3.087	3.067	3.044	3.152	3.108	3.214	3.055
85	2.425	2.405	2.404	2.468	2.425	2.465	2.356
86	2.028	1.963	1.897	1.895	1.896	1.937	1.833
87	1.367	1.368	1.345	1.345	1.388	1.387	1.353
88	0.794	0.882	0.838	0.881	1.191	1.322	0.829
89	0.529	0.772	0.971	0.529	0.595	0.770	0.567
90	0.441	0.353	0.287	0.463	0.441	0.440	0.327
91	0.044	0.066	0.022	0.000	0.132	0.110	0.044
92	0.000	0.044	0.000	0.044	0.022	0.022	0.044
93	0.044	0.066	0.044	0.022	0.000	0.022	0.000
94	0.044	0.044	0.044	0.044	0.044	0.022	0.044
95	0.044	0.044	0.022	0.022	0.022	0.022	0.000
96	0.000	0.066	0.022	0.022	0.022	0.044	0.044
97	0.088	0.022	0.088	0.088	0.066	0.044	0.044
98	0.088	0.088	0.088	0.044	0.088	0.022	0.000
99	0.044	0.066	0.044	0.044	0.088	0.066	0.044
100	0.000	0.044	0.044	0.066	0.066	0.066	0.044
101	0.044	0.066	0.044	0.022	0.066	0.044	0.000
102	0.088	0.088	0.044	0.066	0.022	0.044	0.044
103	0.044	0.022	0.066	0.066	0.066	0.066	0.044
104	0.088	0.110	0.022	0.066	0.088	0.066	0.044
105	0.044	0.044	0.022	0.066	0.066	0.022	0.087
106	0.044	0.044	0.044	0.044	0.088	0.022	0.087
107	0.088	0.044	0.066	0.066	0.110	0.066	0.044
108	0.088	0.066	0.044	0.110	0.022	0.044	0.131
109	0.088	0.044	0.066	0.044	0.132	0.066	0.087
110	0.044	0.088	0.044	0.110	0.066	0.066	0.087
111	0.088	0.066	0.132	0.066	0.088	0.066	0.087



CANDELA TABULATION - (Cont.)

112	0.044	0.066	0.066	0.066	0.066	0.022	0.065
113	0.132	0.066	0.088	0.088	0.088	0.066	0.044
114	0.088	0.088	0.110	0.088	0.044	0.132	0.087
115	0.088	0.110	0.044	0.066	0.044	0.066	0.087
116	0.044	0.088	0.132	0.044	0.088	0.066	0.044
117	0.088	0.044	0.088	0.088	0.022	0.088	0.131
118	0.044	0.066	0.066	0.044	0.110	0.044	0.087
119	0.132	0.088	0.000	0.110	0.066	0.044	0.087
120	0.044	0.044	0.088	0.066	0.066	0.066	0.044
121	0.088	0.110	0.088	0.066	0.044	0.088	0.087
122	0.044	0.044	0.110	0.066	0.088	0.132	0.131
123	0.000	0.110	0.044	0.110	0.044	0.110	0.087
124	0.088	0.132	0.066	0.132	0.110	0.088	0.087
125	0.132	0.132	0.088	0.088	0.066	0.110	0.087
126	0.088	0.088	0.088	0.110	0.110	0.154	0.087
127	0.132	0.088	0.110	0.132	0.110	0.110	0.065
128	0.088	0.154	0.110	0.132	0.110	0.132	0.131
129	0.132	0.154	0.088	0.132	0.132	0.198	0.131
130	0.176	0.199	0.110	0.154	0.110	0.154	0.087
131	0.132	0.110	0.110	0.132	0.176	0.110	0.131
132	0.132	0.110	0.110	0.154	0.132	0.132	0.087
133	0.132	0.154	0.199	0.132	0.132	0.154	0.131
134	0.088	0.132	0.221	0.154	0.176	0.154	0.175
135	0.088	0.132	0.132	0.154	0.110	0.132	0.131
136	0.176	0.110	0.088	0.132	0.110	0.132	0.065
137	0.132	0.154	0.110	0.110	0.110	0.110	0.044
138	0.176	0.088	0.088	0.132	0.110	0.088	0.131
139	0.088	0.132	0.088	0.132	0.110	0.088	0.131
140	0.132	0.088	0.132	0.110	0.110	0.110	0.131
141	0.088	0.110	0.110	0.132	0.110	0.132	0.196
142	0.132	0.088	0.110	0.110	0.154	0.198	0.131
143	0.132	0.110	0.110	0.154	0.132	0.110	0.087
144	0.176	0.154	0.176	0.132	0.220	0.110	0.131
145	0.132	0.132	0.176	0.176	0.176	0.154	0.218
146	0.176	0.154	0.132	0.176	0.132	0.132	0.131
147	0.176	0.154	0.176	0.132	0.176	0.198	0.175
148	0.220	0.199	0.198	0.176	0.242	0.198	0.218
149	0.220	0.176	0.176	0.198	0.198	0.198	0.175
150	0.265	0.221	0.243	0.264	0.220	0.242	0.218
151	0.265	0.265	0.221	0.242	0.264	0.242	0.218
152	0.220	0.243	0.287	0.264	0.220	0.242	0.262
153	0.309	0.243	0.265	0.242	0.286	0.264	0.305
154	0.309	0.331	0.265	0.331	0.308	0.286	0.305
155	0.220	0.375	0.331	0.331	0.309	0.330	0.349
156	0.353	0.331	0.353	0.375	0.309	0.352	0.393
157	0.309	0.353	0.375	0.397	0.375	0.330	0.349
158	0.441	0.419	0.397	0.419	0.419	0.440	0.436
159	0.397	0.485	0.463	0.463	0.441	0.484	0.436
160	0.485	0.419	0.485	0.463	0.507	0.396	0.524
161	0.485	0.529	0.507	0.529	0.529	0.506	0.567
162	0.529	0.574	0.573	0.507	0.573	0.550	0.524
163	0.617	0.596	0.573	0.573	0.573	0.572	0.611
164	0.617	0.640	0.618	0.617	0.639	0.616	0.655
165	0.617	0.684	0.640	0.639	0.639	0.660	0.655
166	0.661	0.662	0.706	0.683	0.683	0.638	0.655
167	0.617	0.640	0.684	0.705	0.705	0.660	0.698
168	0.750	0.706	0.728	0.683	0.727	0.704	0.655



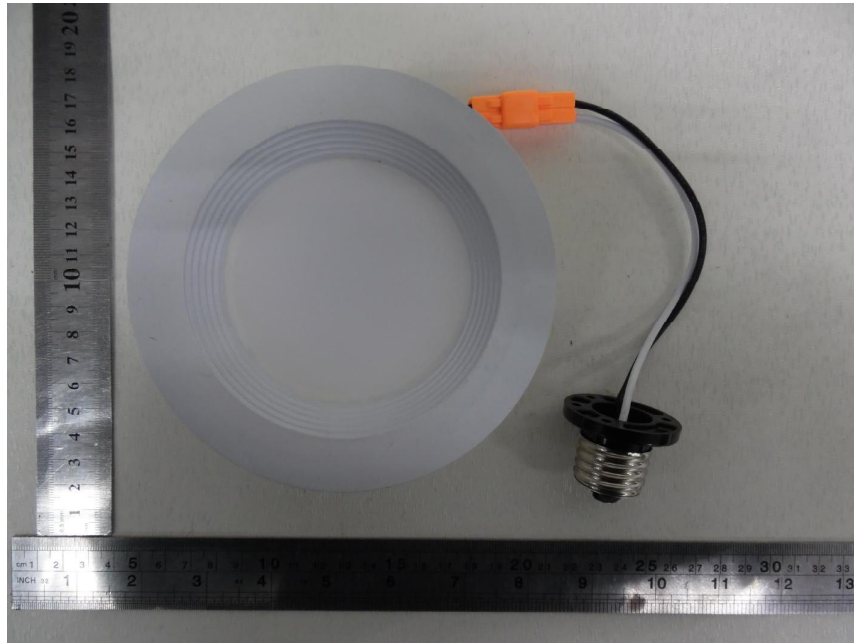
LCTECH

CANDELA TABULATION - (Cont.)

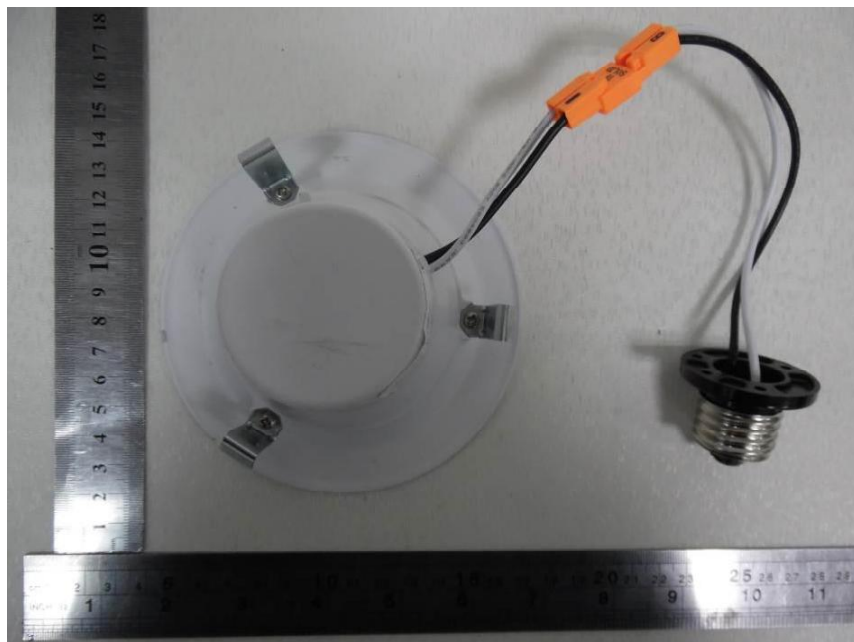


169	0.661	0.750	0.684	0.727	0.683	0.704	0.698
170	0.706	0.728	0.728	0.793	0.771	0.704	0.698
171	0.794	0.728	0.772	0.727	0.793	0.726	0.698
172	0.750	0.750	0.728	0.771	0.727	0.748	0.742
173	0.750	0.772	0.750	0.749	0.771	0.792	0.785
174	0.794	0.794	0.750	0.771	0.793	0.792	0.742
175	0.794	0.794	0.816	0.749	0.793	0.792	0.742
176	0.794	0.816	0.794	0.816	0.793	0.814	0.873
177	0.838	0.816	0.794	0.771	0.793	0.836	0.829
178	0.794	0.772	0.772	0.816	0.816	0.792	0.785
179	0.794	0.794	0.794	0.793	0.771	0.815	0.785
180	0.824	0.824	0.824	0.824	0.824	0.824	0.824

Appendix 1 Product Photo



Picture 1



Picture 2

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



LCTECH



Attachment 1

**U.S. Department of Energy
Lighting Facts^{CM} Uniform LM-79 Reporting Template**

Laboratory Information

Name of test lab	LCTECH (Zhongshan) Testing Service Co.,Ltd
Date of test report	Mar. 9, 2016
Test report number	LCZP16010144
Laboratory contact name	Richard Li

Product Information

Manufacturer	Elec-Tech International Co., Ltd	
Brand name	ETI, Commercial Electric	
Model number	531851XX	
SKU(if available)	N/A	
Type of luminaire (for integral lamps, list base type and lamp type)	SSL Downlight Retrofit Kits	
Luminaire aperture	-	in.
Luminaire height	0.0	in.
Luminaire length	3.5	in.
Luminaire width	3.5	in.
Number of units(modular products)	N/A	

Electrical Measurements	Integrating sphere output	Goniophotometer Output	
Input wattage	9.48	9.40	W
Input current	0.085	0.083	A
Input voltage(AC)	120.02	120.00	V
Power factor	0.935	0.945	
Off-state power	0.0	0.0	W

Photometric Characteristics

Total initial lumen output	676.30	672.94	lm
Initial luminaire efficacy	71.34	71.59	lm/W
Correlated color temperature / CCT	2667	K	
Color rendering index/CRI	90.0		
Rgvalue	43		
Duv	0.00059		

Luminous Intensity Distribution		Goniophotometer Output	
Center beam candle power(if applicable)		268.54	cd
Beam angle(if applicable)		105.1	°
Zonallumensinthe0°-60°zone	--	84.7	%
Zonal lumens in the60°-90° zone		15.2	%
Zonallumensinthe90°-120°zone		0.0	%
Zonallumensinthe120°-180°zone		0.2	%



LCTECH



Attachment 1-1

**U.S. Department of Energy
Lighting Facts^{CM} Uniform LM-79 Reporting Template**

Laboratory Information

Name of test lab	LCTECH (Zhongshan) Testing Service Co.,Ltd
Date of test report	Mar. 9, 2016
Test report number	LCZP16010144
Laboratory contact name	Richard Li

Product Information

Manufacturer	Elec-Tech International Co., Ltd	
Brand name	ETI, Commercial Electric	
Model number	531851XX	
SKU(if available)	N/A	
Type of luminaire (for integral lamps, list base type and lamp type)	SSL Downlight Retrofit Kits	
Luminaire aperture	-	in.
Luminaire height	0.0	in.
Luminaire length	3.5	in.
Luminaire width	3.5	in.
Number of units(modular products)	N/A	

Electrical Measurements	Integrating sphere output	Goniophotometer Output	
Input wattage	9.44	-	W
Input current	0.084	-	A
Input voltage(AC)	120.00	-	V
Power factor	0.935	-	
Off-state power	0.0	0.0	W

Photometric Characteristics			
Total initial lumen output	715.09	-	lm
Initial luminaire efficacy	75.75	-	lm/W
Correlated color temperature / CCT	4051	K	
Color rendering index/CRI	92.5		
Rgvalue	72		
Duv	-0.0017		

Luminous Intensity Distribution			
		Goniophotometer Output	
Center beam candle power(if applicable)		-	cd
Beam angle(if applicable)		-	°
Zonallumensinthe0°-60°zone	--	-	%
Zonal lumens in the60°-90° zone		-	%
Zonallumensinthe90°-120°zone		-	%
Zonallumensinthe120°-180°zone		-	%