

**LM-79-08 Test Report**

For

**DONGGUAN THAILIGHT  
SEMICONDUCTOR LIGHTING CO.,LTD****(Brand Name: THAILIGHT)**

Sanhui Ind. Area, Cunwei, Hengli, Dongguan, China.

**Fuel Pump Canopy Luminaires**

Model name(s): TLCLB40XYZZ

Remark: X=CCT(4=4000K,5=5000K)

YY=Mounting Option(PD=Pendant, CL=Ceiling)

ZZ=Housing Color (use 2 digits to indicate all of color)

Representative (Tested) Model: TLCLB404PDZZ  
TLCLB405PDZZ

Model Different: All construction and rating are the same, except CCT

Test &amp; Report By:

*Johnson Sun*

Engineer: Johnson Sun

Update: Nov.03, 2016

Review By:

*Tommy Liang*

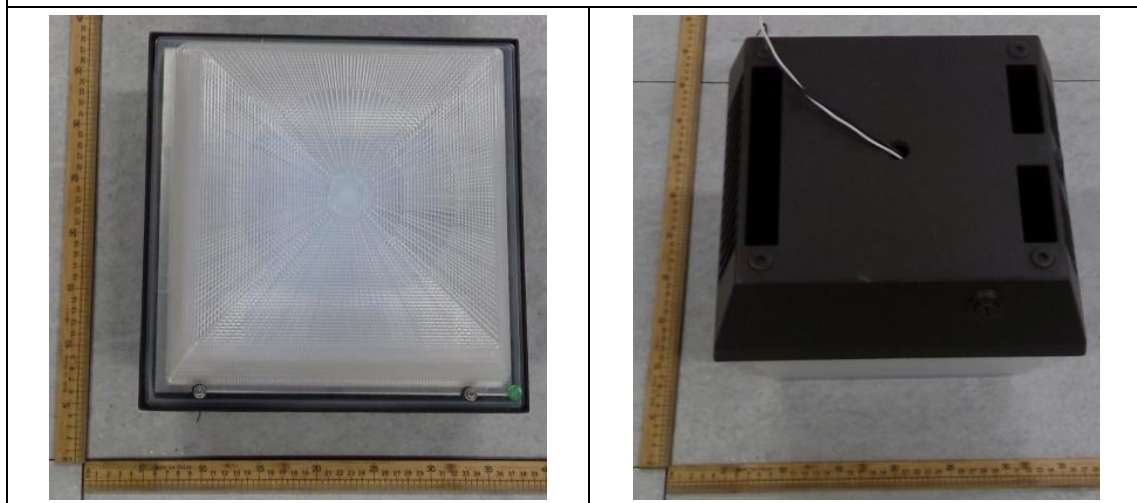
Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

**1.1 Product Information:**

Organization Name	DONGGUAN THAILIGHT SEMICONDUCTOR LIGHTING CO.,LTD	
Brand Name	THAILIGHT	
Model Number	TLCLB40XYZZ	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Fuel Pump Canopy Luminaires	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	40W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	L130-2780003000W21	
Sample Number	GZE161105-J1(4000K),J2(5000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**



**1.2 Test Specifications:**

Date of Receipt	: Oct.31,2016
Date of Test	: Nov.01,2016
Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>
Reference Work Instruction	QD25

**1.3 Test Methods**

<p><b>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</b></p> <p>Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 °C ± 1 °C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1 °vertical intervals and 22.5 °horizontal intervals.</p>
<p><b>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</b></p> <p>Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 °C ± 1 °C. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.</p>
<p><b>3) Electrical Measurements:</b></p> <p>Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25 °C ± 1 °C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.</p>

**2.1 Electrical, Photometric and Chromaticity Measurements**

(Refer to Work Instruction QD25)

<b>Test date</b>	2016-11-01	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	TLCLB404PDZZ		

**Electrical Measurement :**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.3356	39.58	0.9829	10.75
J1	277.0	60	0.1583	39.58	0.9026	15.33
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

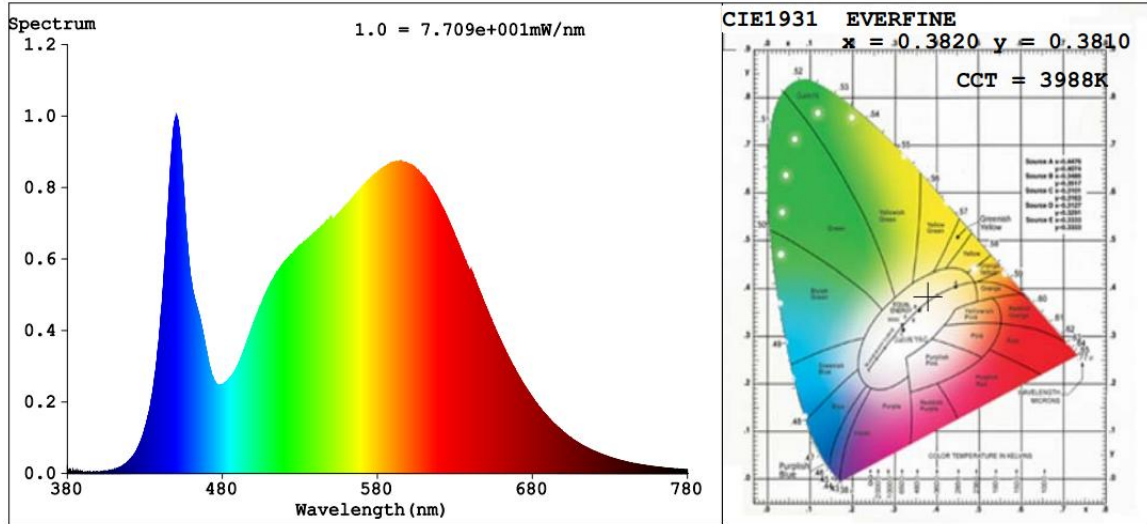
**Chromaticity Measurement - Sphere-Spectroradiometer Method :**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	10
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	3988	R3	94	R11	81
Duv	0.0015	R4	82	R12	61
Chromaticity (x, y)	x=0.3820 y=0.3810	R5	81	R13	83
Chromaticity (u', v')	u'=0.2245 v'=0.5037	R6	84	R14	97
Color Rendering Index (CRI)	83.1	R7	87	R15	75
R9	10	R8	66	--	--

**Photometric Measurement – Goniophotometer Method :**

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	4905.9	4870.0	>=2000 (-10%)	
Luminous Efficacy (lm/W)	123.95	123.04	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Zonal lumens in the 0-40 °zone (%)	42.7	--	>=40(-3)	
Zonal lumens in the 40-70 °zone (%)	40.7	--	>=40(-3)	
Beam Angle (°)	107.0	--	--	
Center Beam Candle Power (cd)	1675	--	--	

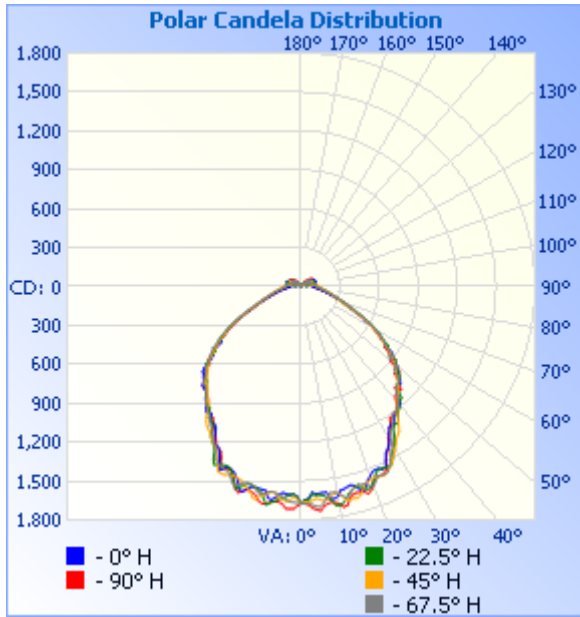
**Spectral Power Distribution & Chromaticity Diagram**



**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,308.2	26.7%
0-40	2,093.1	42.7%
0-60	3,619.7	73.8%
60-90	895.5	18.3%
70-100	533.7	10.9%
90-120	279.2	5.7%
0-90	4,515.1	92%
90-180	390.4	8%
0-180	4,905.5	100%

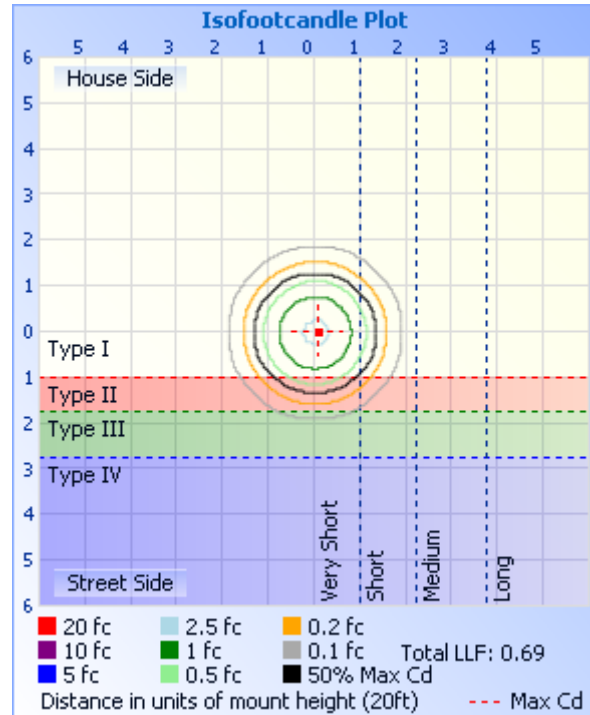
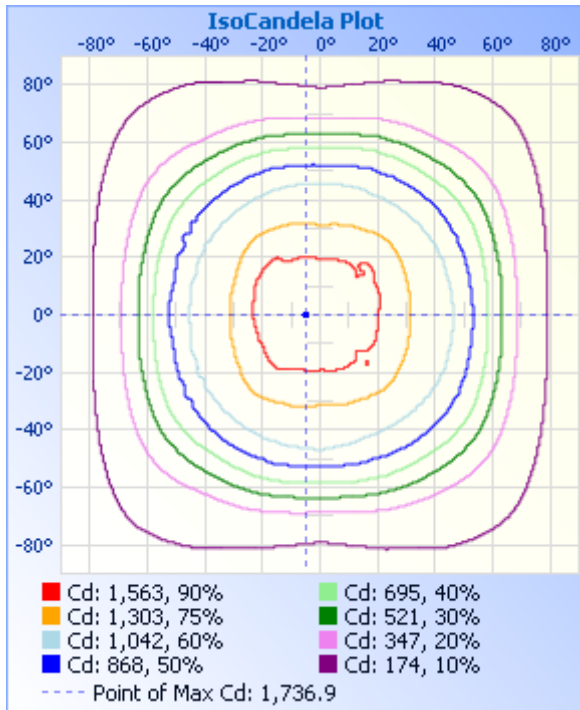
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	156.9	3.2%	90-100	109.9	2.2%
10-20	458.6	9.3%	100-110	89.8	1.8%
20-30	692.7	14.1%	110-120	79.5	1.6%
30-40	784.9	16.0%	120-130	65.1	1.3%
40-50	810.8	16.5%	130-140	31.6	0.6%
50-60	715.8	14.6%	140-150	11.0	0.2%
60-70	471.7	9.6%	150-160	2.6	0.1%
70-80	264.2	5.4%	160-170	0.7	0%
80-90	159.6	3.3%	170-180	0.3	0%



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	5.80 fc	44.3 ft	44.8 ft
34.0ft	1.45 fc	88.5 ft	89.6 ft
51.0ft	0.64 fc	132.8 ft	134.5 ft
68.0ft	0.36 fc	177.1 ft	179.3 ft
85.0ft	0.23 fc	221.3 ft	224.1 ft
102.0ft	0.16 fc	265.6 ft	268.9 ft

■ Vert. Spread: 104.9°  
■ Horiz. Spread: 105.6°



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Tel: 8620-3229 0320

Fax: 8620-32290422

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C (DEG) γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675	1675
5	1680	1649	1639	1626	1600	1611	1645	1704	1737	1669	1650	1615	1594	1636	1646	1628
10	1702	1620	1598	1699	1638	1712	1615	1615	1702	1615	1646	1667	1594	1662	1636	1619
15	1622	1571	1644	1574	1588	1597	1688	1602	1645	1607	1630	1624	1615	1575	1609	1566
20	1544	1628	1549	1577	1554	1616	1578	1637	1616	1652	1609	1557	1517	1545	1548	1577
25	1455	1496	1544	1536	1538	1540	1575	1577	1551	1528	1531	1536	1484	1519	1528	1506
30	1316	1361	1404	1417	1360	1428	1443	1402	1338	1385	1440	1409	1330	1373	1370	1352
35	1215	1227	1289	1270	1244	1287	1308	1224	1219	1236	1312	1261	1199	1238	1271	1220
40	1116	1155	1134	1156	1189	1169	1155	1165	1133	1168	1148	1168	1145	1138	1122	1143
45	1059	1052	1042	1048	1070	1061	1055	1059	1065	1047	1061	1052	1077	1024	1033	1065
50	915	955	931	953	979	967	949	981	900	953	934	970	978	935	931	960
55	781	816	797	842	809	820	795	789	784	782	805	844	747	828	791	827
60	622	660	643	666	643	665	638	674	649	678	633	657	641	648	632	662
65	436	482	455	487	449	484	457	492	464	500	460	475	448	466	456	484
70	306	337	321	348	322	344	320	352	336	364	324	335	309	329	321	340
75	217	252	251	259	229	256	249	257	232	264	249	249	219	247	248	249
80	157	192	203	197	167	196	203	194	167	200	201	189	159	189	200	189
85	112	147	162	152	120	152	163	150	120	154	160	145	112	147	158	145
90	87.6	117	132	121	95.0	123	135	119	95.0	125	133	117	89.6	121	131	116
95	86.8	114	123	99.2	85.4	106	129	115	93.3	120	121	88.6	78.5	97.0	123	113
100	91.6	102	87.4	39.0	36.0	37.2	96.7	106	97.8	105	83.3	49.0	31.4	47.4	92.3	103
105	84.2	77.9	76.0	107	114	106	74.4	83.1	91.5	78.1	71.5	106	111	110	76.2	79.0
110	52.6	52.4	84.5	103	119	109	75.4	53.8	56.8	51.5	87.5	100	113	109	73.7	50.1
115	43.1	48.8	100	97.3	115	101	94.7	48.0	48.5	53.6	99.5	90.9	105	99.4	89.4	40.2
120	69.6	64.5	88.6	82.6	98.1	85.2	89.4	72.9	83.2	75.8	85.7	77.6	86.5	82.5	84.8	64.4
125	95.9	76.0	71.2	64.6	80.7	67.3	71.1	84.1	106	81.7	67.7	59.7	71.8	63.8	66.6	80.7
130	84.1	66.5	49.3	38.4	23.2	44.3	49.0	75.0	93.6	72.3	44.5	36.6	15.4	41.8	44.1	71.0
135	70.4	54.1	29.8	26.5	34.8	27.4	28.1	59.6	77.6	57.0	24.7	21.1	29.5	22.0	28.3	57.9
140	52.8	40.4	19.0	12.3	19.3	10.4	21.0	43.7	55.9	41.9	19.1	7.02	13.2	6.08	20.7	42.8
145	37.6	29.4	12.1	2.44	2.57	2.33	13.0	30.6	38.4	31.6	13.4	2.23	2.18	2.23	11.9	30.5
150	26.3	19.4	2.78	2.39	2.34	2.33	4.34	20.7	27.2	22.7	7.15	2.23	2.29	2.23	2.18	18.4
155	12.4	5.54	2.55	2.55	2.44	2.33	2.13	8.61	14.4	12.0	2.12	2.23	2.23	2.18	2.18	2.23
160	2.01	2.06	2.49	2.55	2.44	2.33	2.13	2.28	2.01	2.12	2.12	2.33	2.29	2.28	2.13	2.18
165	2.01	1.96	2.44	2.60	2.44	2.33	2.18	2.07	2.32	2.12	2.07	2.49	2.23	2.34	2.23	2.44
170	2.32	2.12	2.71	2.81	2.71	2.81	2.70	2.12	2.96	2.81	2.65	3.02	3.19	3.50	3.08	3.08
175	2.48	2.43	2.92	2.97	3.24	2.92	2.92	2.18	3.01	2.91	2.60	3.02	3.08	3.45	3.08	3.02
180	2.48	2.70	3.02	2.97	3.24	2.97	2.98	2.18	2.69	2.54	2.55	2.81	2.97	3.24	3.03	2.97

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**BUG Rating: B2-U3-G1**

**IESNA Luminaire Flux Distribution Table:**

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	655.76	13.4
FM - Front-Medium(30-60)	1160.9	23.7
FH - Front-High(60-80)	368.05	7.5
FVH - Front-Very High(80-90)	80.236	1.6
<b>Total Forward Light</b>	<b>2461.4</b>	<b>50.2</b>

BL - Back-Low(0-30)	652.43	13.3
BM - Back-Medium(30-60)	1151.1	23.5
BH - Back-High(60-80)	367.77	7.5
BVH - Back-Very High(80-90)	79.339	1.6
<b>Total Back Light</b>	<b>2444.8</b>	<b>49.8</b>

UL - Uplight-Low(90-100)	109.87	2.2
UH - Uplight-High(100-180)	280.79	5.7
<b>Total Up Light</b>	<b>390.66</b>	<b>8.0</b>

<b>BUG(Back,Up,Glare) Rating</b>	<b>B2-U3-G1</b>
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	2250.6	194.19	2444.8
Street Side	2264.9	196.47	2461.4



**2.2 Electrical, Photometric and Chromaticity Measurements**

(Refer to Work Instruction QD25)

<b>Test date</b>	2016-11-01	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	TLCLB405PDZZ		

**Electrical Measurement :**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.3341	39.43	0.9836	10.71
J2	277.0	60	0.1575	39.42	0.9033	15.29
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

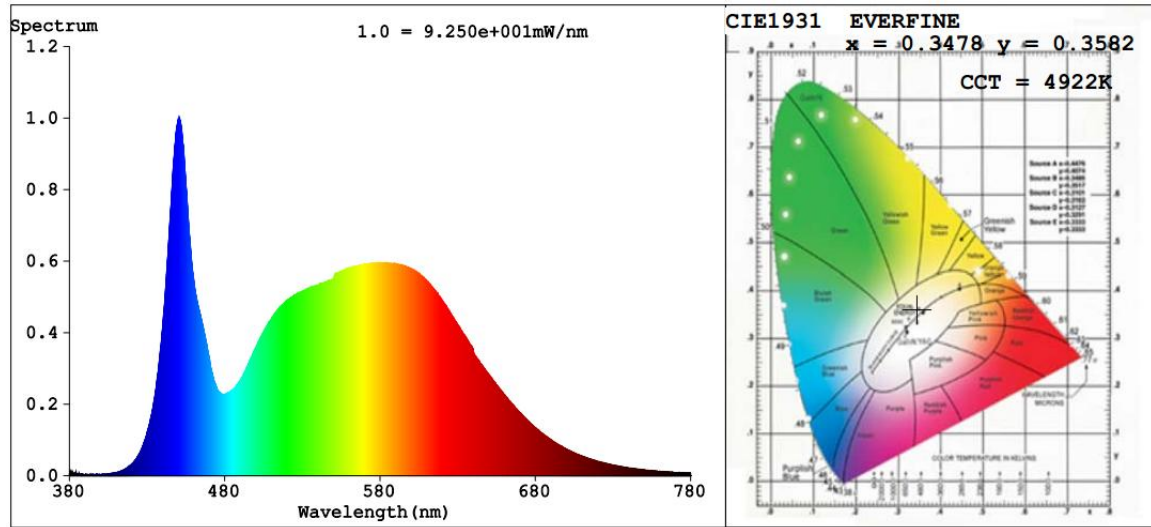
**Chromaticity Measurement - Sphere-Spectroradiometer Method :**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	10
Frequency (Hz)	60	R2	88	R10	71
CCT (K)	4922	R3	93	R11	81
Duv	0.0022	R4	82	R12	56
Chromaticity (x, y)	x=0.3478 y=0.3582	R5	81	R13	83
Chromaticity (u', v')	u'=0.2107 v'=0.4882	R6	83	R14	96
Color Rendering Index (CRI)	83.0	R7	88	R15	76
R9	10	R8	68	--	--

**Photometric Measurement – Sphere-Spectroradiometer Method :**

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	4937	4901	>=2000 (-10%)	
Luminous Efficacy (lm/W)	125.21	124.33	Standard: >= 100(-3%)	Premium: >= 120(-3%)

**Spectral Power Distribution & Chromaticity Diagram**



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**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

**\*\*\*\*\* END OF REPORT \*\*\*\*\***

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