

**LM-79-08 Test Report**

For

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

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

**Outdoor Full-Cutoff Wall-mounted Area Luminaires**

Model name(s): TLWMK50XYZZ

Remark: X=CCT(3=3000K,4=4000K,5=5000K)

YY=Mounting Option(WM=Wall Mount)

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

Representative (Tested) Model: TLWMK503WMZZ  
TLWMK505WMZZ

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

Test &amp; Report By:

*Johnson Sun*

Engineer: Johnson Sun

Update: Nov.16, 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.

**Laboratory: Standard-Tech Co. Ltd Testing Center****NVLAP CODE: 201011-0**

Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

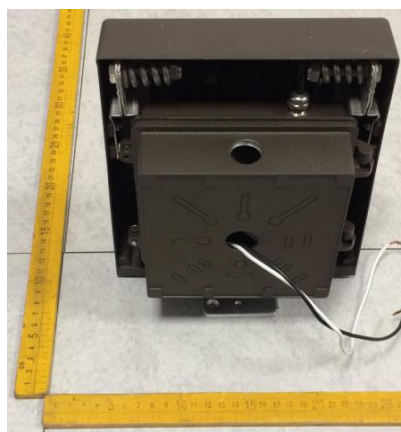
Tel: 8620-3229 0320

Fax: 8620-32290422

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**1.1 Product Information:**

Organization Name	DONGGUAN THAILIGHT SEMICONDUCTOR LIGHTING CO.,LTD	
Brand Name	THAILIGHT	
Model Number	TLWMK50XYZZ	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Full-Cutoff Wall-mounted Area Luminaires	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	50W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	L130-2780003000W21	
Sample Number	GZE161105-BJ1(3000K),BJ2(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	: Nov.11,2016
Date of Test	: Nov.12,2016
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****1) Photometric and Light Distribution Measurement – Goniophotometer Method:**

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , 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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals.

**2) Chromaticity Measurement – Sphere-Spectroradiometer Method:**

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . 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.

**3) Electrical Measurements:**

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . 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.

**2.1 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction QD25)*

Test date	2016-11-12	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	TLWMK503WMZZ		

**Electrical Measurement :**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-BJ1	120.0	60	0.4196	49.67	0.9864	11.63
	277.0	60	0.1918	48.17	0.9068	13.69
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

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

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	12
Frequency (Hz)	60	R2	91	R10	79
CCT (K)	3101	R3	97	R11	82
Duv	-0.0000	R4	82	R12	72
Chromaticity (x, y)	x=0.4299 y=0.4015	R5	82	R13	84
Chromaticity (u', v')	u'=0.2472 v'=0.5193	R6	89	R14	99
Color Rendering Index (CRI)	83.5	R7	84	R15	75
R9	12	R8	62	--	--

**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)	5099.0	4919.6	>=300 (-10%)	
Luminous Efficacy (lm/W)	102.66	102.13	Standard: >= 95(-3%)	Premium: >= 115(-3%)
Zonal lumens in the 0-90 °zone (%)	100	--	>=100(-3)	
Zonal lumens in the 80-90 °zone (%)	1.0	--	<=10(3)	
Beam Angle (°)	91.5	--	--	
Center Beam Candle Power (cd)	2316	--	--	

**Laboratory: Standard-Tech Co. Ltd Testing Center****NVLAP CODE: 201011-0**

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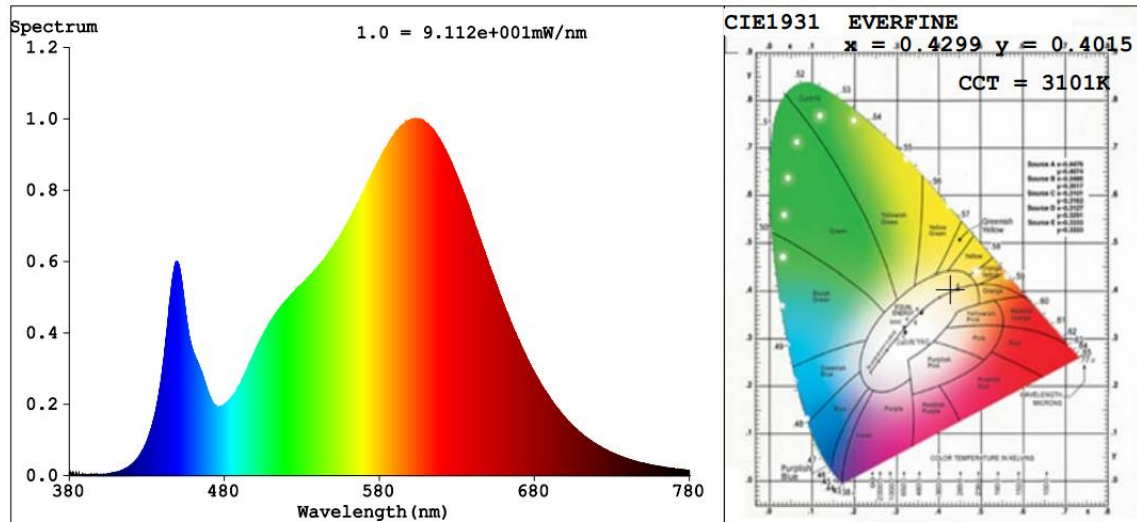
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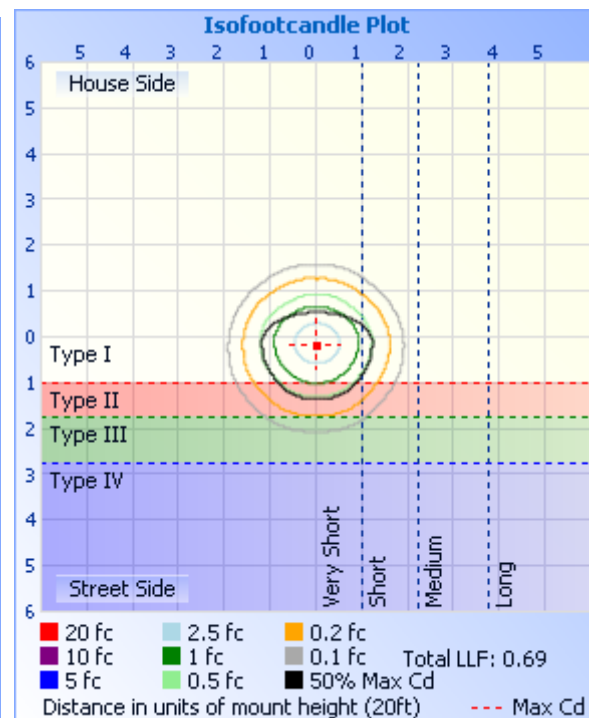
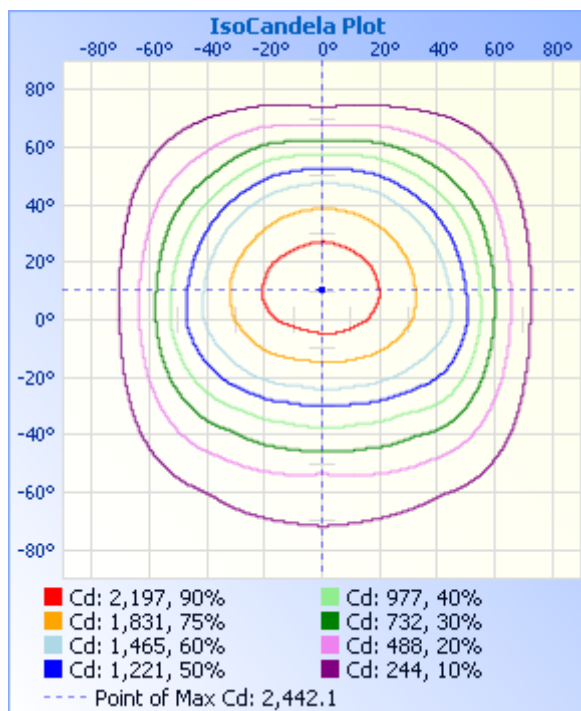
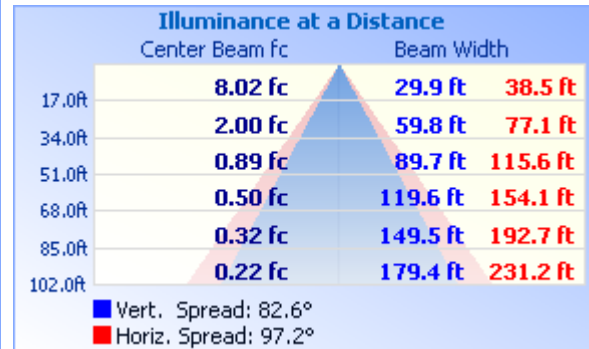
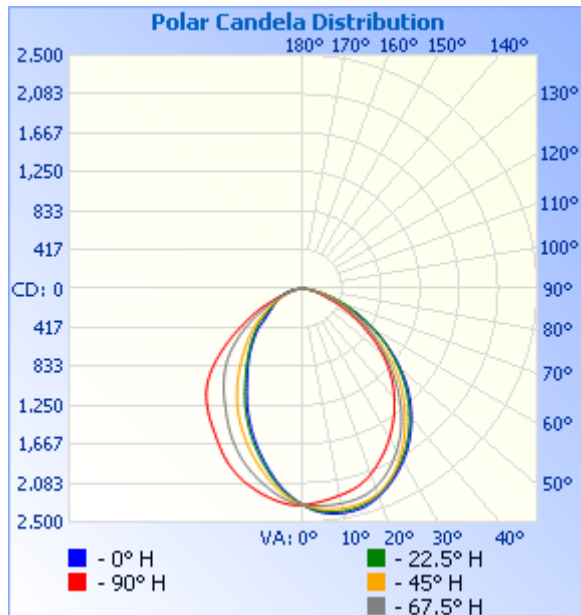
## Spectral Power Distribution &amp; Chromaticity Diagram



## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,696.5	33.3%
0-40	2,679.8	52.6%
0-60	4,366.4	85.6%
60-90	731.8	14.4%
70-100	265.7	5.2%
90-120	0	0%
0-90	5,098.2	100%
90-180	0	0%
0-180	5,098.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	217.1	4.3%	90-100	0	0%
10-20	605.5	11.9%	100-110	0	0%
20-30	873.9	17.1%	110-120	0	0%
30-40	983.3	19.3%	120-130	0	0%
40-50	942.3	18.5%	130-140	0	0%
50-60	744.3	14.6%	140-150	0	0%
60-70	466.0	9.1%	150-160	0	0%
70-80	215.3	4.2%	160-170	0	0%
80-90	50.4	1.0%	170-180	0	0%



C (DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	2316	2316	2316	2316	2316	2316	2316	2316	2316	2316	2316	2316	2316	2316	2316	2316
5	2309	2349	2387	2404	2408	2392	2369	2335	2287	2244	2205	2179	2177	2192	2223	2261
10	2259	2333	2397	2433	2441	2419	2390	2336	2248	2157	2066	2005	1999	2025	2084	2167
15	2191	2290	2361	2412	2434	2409	2382	2321	2202	2063	1911	1815	1806	1838	1924	2056
20	2104	2221	2297	2341	2368	2348	2336	2262	2113	1937	1753	1624	1610	1648	1758	1931
25	1990	2113	2191	2233	2265	2241	2230	2152	1988	1773	1581	1428	1406	1450	1590	1784
30	1851	1971	2057	2106	2136	2111	2076	2001	1846	1597	1388	1231	1200	1247	1410	1623
35	1727	1811	1893	1953	1981	1954	1891	1826	1689	1421	1190	1053	1032	1062	1221	1466
40	1604	1655	1715	1778	1801	1769	1691	1622	1515	1242	998	896	880	908	1033	1319
45	1450	1482	1522	1586	1600	1565	1476	1394	1331	1062	828	758	738	769	866	1170
50	1229	1278	1309	1375	1373	1347	1240	1168	1120	873	671	627	572	640	718	987
55	962	1049	1085	1148	1130	1113	993	949	886	688	533	483	448	498	576	779
60	707	818	854	913	871	885	759	737	651	510	398	381	371	387	433	572
65	494	596	631	674	627	658	556	529	443	351	284	312	320	308	302	393
70	297	404	442	460	411	452	389	346	263	225	203	243	266	243	214	254
75	180	248	283	276	228	276	248	203	158	123	140	176	198	180	145	150
80	95.4	116	145	130	93.0	131	125	87.8	79.4	67.5	81.8	113	137	118	85.6	77.0
85	39.7	44.7	49.2	36.4	23.6	34.4	37.4	33.6	30.3	26.9	38.2	58.9	81.4	61.7	39.7	31.9
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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**BUG Rating: B2-U0-G1****IESNA Luminaire Flux Distribution Table:**

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	945.39	18.5
FM - Front-Medium(30-60)	1638.6	32.1
FH - Front-High(60-80)	426.78	8.4
FVH - Front-Very High(80-90)	24.331	0.5
Total Forward Light	3035.1	59.5

BL - Back-Low(0-30)	751.21	14.7
BM - Back-Medium(30-60)	1032	20.2
BH - Back-High(60-80)	254.58	5.0
BVH - Back-Very High(80-90)	26.065	0.5
Total Back Light	2063.9	40.5

UL - Uplight-Low(90-100)	0	0.0
UH - Uplight-High(100-180)	0	0.0
Total Up Light	0	0.0

BUG(Back,Up,Glare) Rating	B2-U0-G1
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	2063.9	0	2063.9
Street Side	3035.1	0	3035.1

**2.2 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction QD25)*

Test date	2016-11-12	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	TLWMK505WMZZ		

**Electrical Measurement :**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.4144	49.02	0.9857	11.68
BJ2	277.0	60	0.1894	47.54	0.9061	13.71
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

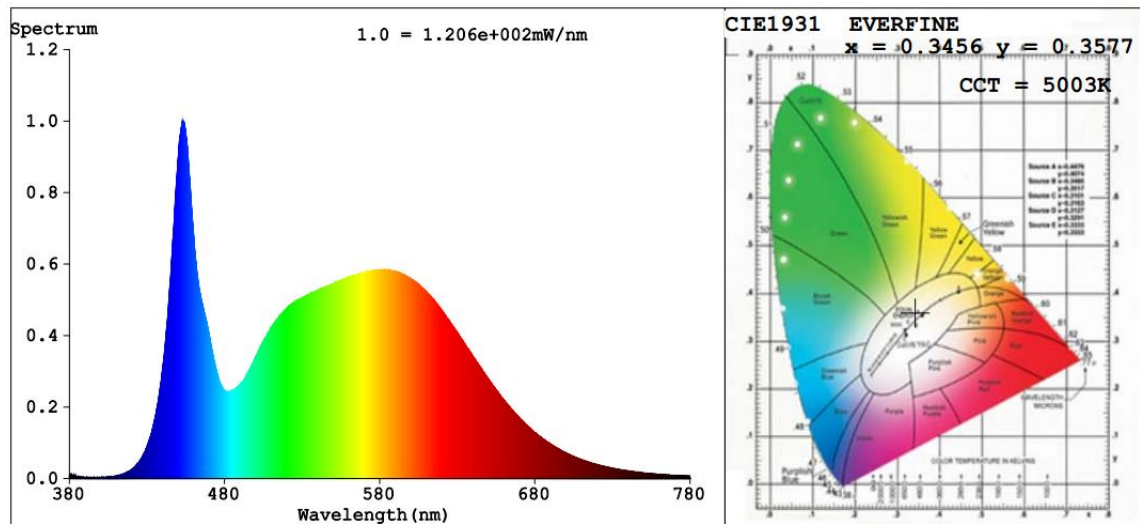
**Chromaticity Measurement - Sphere-Spectroradiometer Method :**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	9
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	5003	R3	93	R11	81
Duv	0.0029	R4	82	R12	60
Chromaticity (x, y)	x=0.3456 y=0.3577	R5	82	R13	84
Chromaticity (u', v')	u'=0.2094 v'=0.4877	R6	84	R14	97
Color Rendering Index (CRI)	83.2	R7	87	R15	76
R9	9	R8	67	--	--

**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)	5287	5102	>=300 (-10%)	
Luminous Efficacy (lm/W)	107.85	107.32	Standard: >= 95(-3%)	Premium: >= 115(-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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