

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): TLWMK30XYZZ

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: TLWMK303WMZZ
TLWMK305WMZZ

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

Test & Report By:

Johnson Sun

Engineer: Johnson Sun

Update: Nov.16, 2016

Review By:

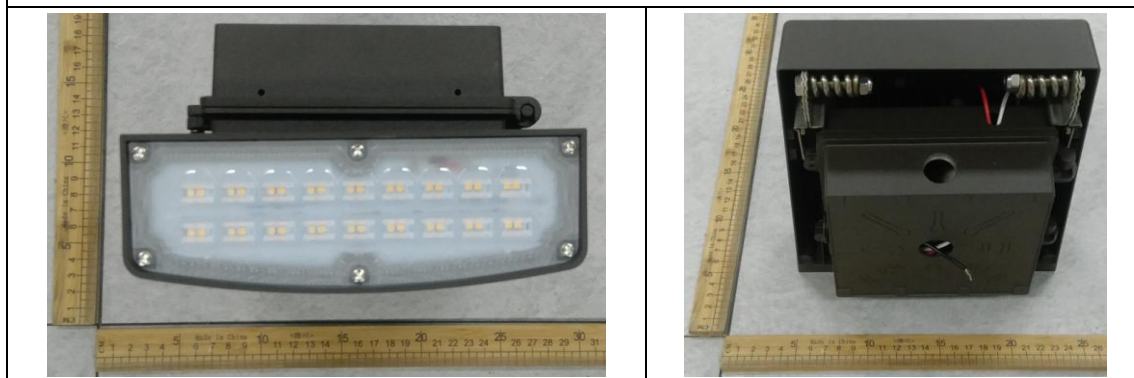
Tommy Liang

Manager: Tommy Liang

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

1.1 Product Information:

Organization Name	DONGGUAN THAILIGHT SEMICONDUCTOR LIGHTING CO.,LTD	
Brand Name	THAILIGHT	
Model Number	TLWMK30XYZZ	
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	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	L130-2780003000W21	
Sample Number	GZE161105-BG1(3000K),BG2(5000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo

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

Report Format Number STD/QR4909-A/2

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1.2 Test Specifications:

Date of Receipt	: Nov.11,2016
Date of Test	: Nov.12,2016
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
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° vertical intervals and 22.5° 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	TLWMK303WMZZ		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.2350	27.82	0.9866	9.02
BG1	277.0	60	0.1117	27.89	0.9013	11.73
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	11
Frequency (Hz)	60	R2	90	R10	78
CCT (K)	3079	R3	97	R11	81
Duv	0.0005	R4	82	R12	71
Chromaticity (x, y)	x=0.4321 y=0.4035	R5	82	R13	84
Chromaticity (u', v')	u'=0.2477 v'=0.5204	R6	88	R14	99
Color Rendering Index (CRI)	83.3	R7	84	R15	74
R9	11	R8	61	--	--

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)	3180.8	3099.4	>=300 (-10%)	
Luminous Efficacy (lm/W)	114.34	111.13	Standard: >= 90(-3%)	Premium: >= 110(-3%)
Zonal lumens in the 0-90 °zone (%)	100	--	>=100(-3)	
Zonal lumens in the 80-90 °zone (%)	0.9	--	<=10(3)	
Beam Angle (°)	92.0	--	--	
Center Beam Candle Power (cd)	1422	--	--	

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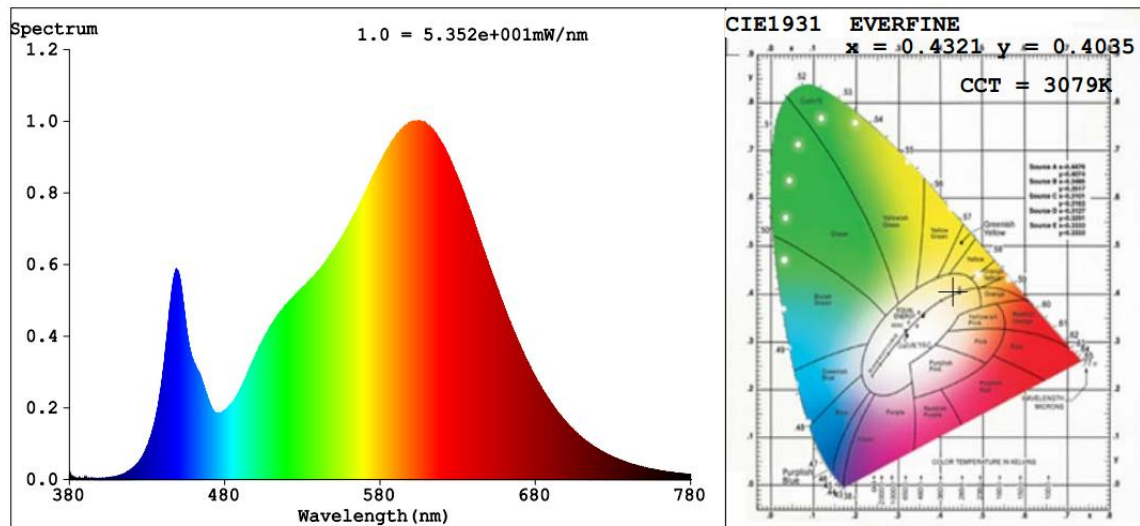
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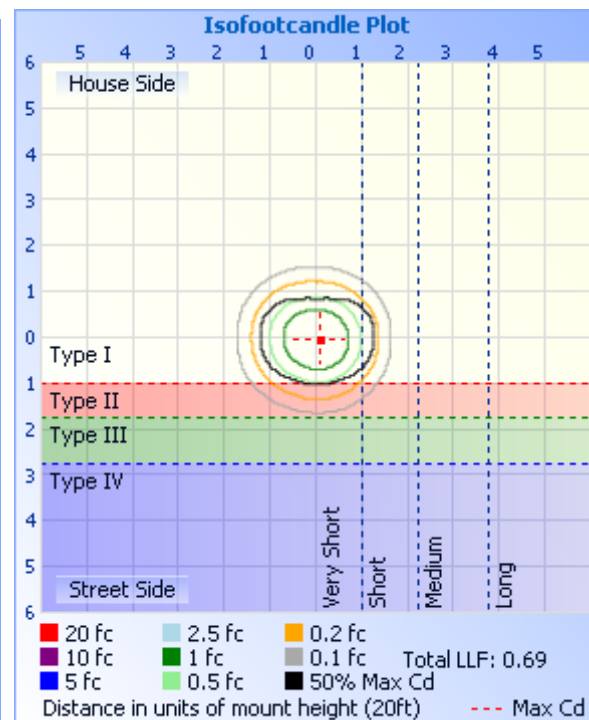
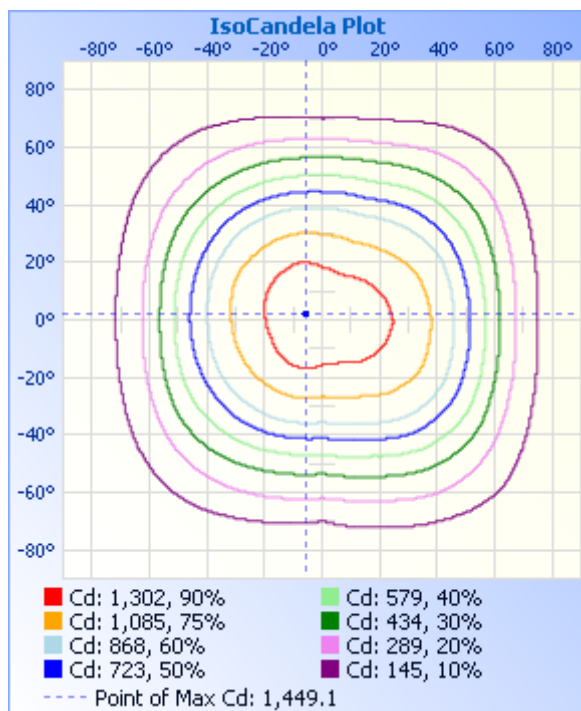
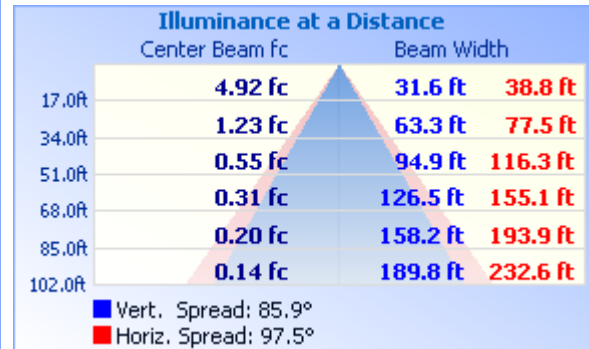
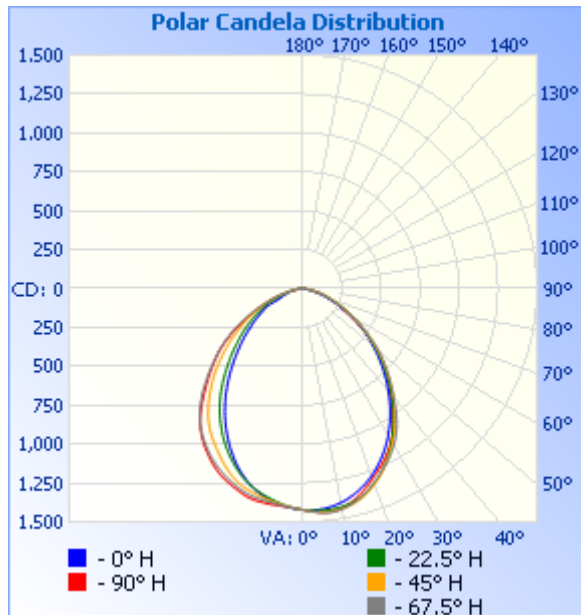
Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,075.4	33.8%
0-40	1,704.6	53.6%
0-60	2,743.6	86.3%
60-90	436.8	13.7%
70-100	153.9	4.8%
90-120	0	0%
0-90	3,180.4	100%
90-180	0	0%
0-180	3,180.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	134.7	4.2%	90-100	0	0%
10-20	382.6	12.0%	100-110	0	0%
20-30	558.0	17.5%	110-120	0	0%
30-40	629.2	19.8%	120-130	0	0%
40-50	583.7	18.4%	130-140	0	0%
50-60	455.3	14.3%	140-150	0	0%
60-70	282.9	8.9%	150-160	0	0%
70-80	125.8	4.0%	160-170	0	0%
80-90	28.0	0.9%	170-180	0	0%



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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	1422	1422	1422	1422	1422	1422	1422	1422	1422	1422	1422	1422	1422	1422	1422	1422
5	1405	1407	1408	1411	1421	1430	1440	1446	1443	1436	1425	1413	1401	1395	1397	1400
10	1399	1395	1388	1383	1397	1424	1437	1439	1431	1421	1408	1386	1363	1357	1372	1385
15	1385	1375	1353	1333	1349	1395	1404	1396	1378	1366	1362	1341	1305	1307	1343	1367
20	1344	1331	1300	1259	1281	1333	1338	1327	1300	1282	1285	1263	1220	1237	1296	1327
25	1296	1272	1223	1173	1194	1244	1246	1250	1221	1192	1183	1160	1114	1148	1223	1276
30	1224	1198	1128	1070	1090	1133	1144	1163	1129	1099	1070	1043	997	1047	1143	1212
35	1139	1107	1029	959	973	1010	1030	1047	1003	991	949	917	871	934	1055	1132
40	1021	1007	920	840	848	878	902	901	873	857	823	782	738	807	942	1032
45	881	880	801	719	722	745	767	767	757	725	694	650	612	679	816	900
50	753	742	678	598	596	615	626	638	630	613	569	531	499	562	684	761
55	625	608	553	484	482	492	496	505	485	496	459	425	398	457	553	633
60	475	481	431	374	357	380	375	374	349	371	356	336	313	362	437	496
65	335	354	317	263	248	273	273	264	248	254	260	258	224	278	335	361
70	225	243	218	168	154	181	187	179	171	167	175	171	141	193	241	244
75	139	146	128	90.6	78.5	105	114	108	115	108	104	107	102	121	139	155
80	61.3	60.2	58.4	32.2	25.4	42.6	52.9	44.7	55.7	64.5	60.7	72.9	69.7	82.4	80.9	83.4
85	22.3	17.0	11.4	4.30	3.15	5.62	11.3	16.1	18.3	23.8	31.4	43.9	39.3	48.8	38.0	27.7
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)	545.4	17.1
FM - Front-Medium(30-60)	862.83	27.1
FH - Front-High(60-80)	206.32	6.5
FVH - Front-Very High(80-90)	8.339	0.3
Total Forward Light	1622.9	51.0

BL - Back-Low(0-30)	530.02	16.7
BM - Back-Medium(30-60)	805.82	25.3
BH - Back-High(60-80)	202.41	6.4
BVH - Back-Very High(80-90)	19.698	0.6
Total Back Light	1558	49.0

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	1558	0	1558
Street Side	1622.9	0	1622.9

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	TLWMK305WMZZ		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-BG2	120.0	60	0.2328	27.55	0.9862	9.06
	277.0	60	0.1107	27.62	0.9009	11.78
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

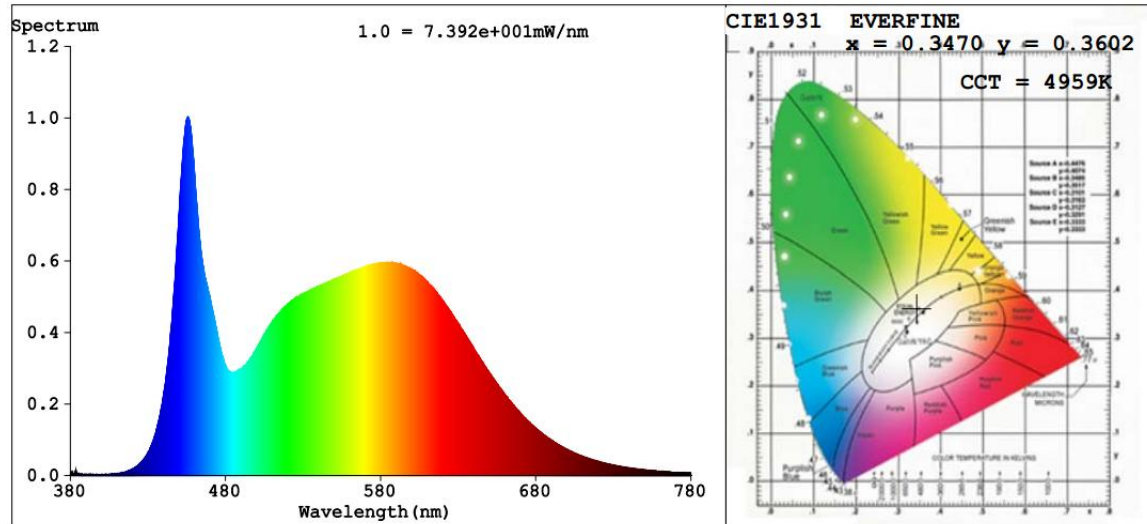
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	15
Frequency (Hz)	60	R2	92	R10	80
CCT (K)	4959	R3	96	R11	78
Duv	0.0035	R4	79	R12	55
Chromaticity (x, y)	x=0.3470 y=0.3602	R5	82	R13	86
Chromaticity (u', v')	u'=0.2094 v'=0.4891	R6	87	R14	98
Color Rendering Index (CRI)	84.1	R7	86	R15	77
R9	15	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)	3298	3214	>=300 (-10%)	
Luminous Efficacy (lm/W)	119.71	116.36	Standard: >= 90(-3%)	Premium: >= 110(-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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