

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): TLWMK120XYZZ

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

YY=Mounting Option(WM=Wall Mount)

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

Representative (Tested) Model: TLWMK1204WMZZ
TLWMK1205WMZZ

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:

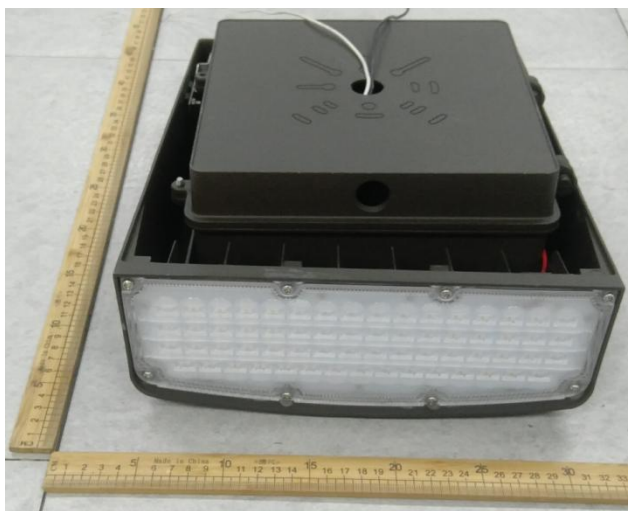
Tommy Liang

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	TLWMK120XYZZ	
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	120W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	L130-2780003000W21	
Sample Number	GZE161105-BM1(4000K),BM2(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"> 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	TLWMK1204WMZZ		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	1.042	124.2	0.9936	8.06
BM1	277.0	60	0.4778	123.8	0.9354	14.26
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	89	R10	74
CCT (K)	4035	R3	95	R11	82
Duv	0.0005	R4	83	R12	63
Chromaticity (x, y)	x=0.3792 y=0.3770	R5	82	R13	84
Chromaticity (u', v')	u'=0.2242 v'=0.5015	R6	85	R14	97
Color Rendering Index (CRI)	83.5	R7	87	R15	76
R9	12	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)	13949	13796	>=300 (-10%)	
Luminous Efficacy (lm/W)	112.31	111.44	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Zonal lumens in the 0-90 °zone (%)	100	--	>=100(-3)	
Zonal lumens in the 80-90 °zone (%)	0.9	--	<=10(3)	
Beam Angle (°)	92.4	--	--	
Center Beam Candle Power (cd)	5984	--	--	

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

Report Format Number STD/QR4909-A/2

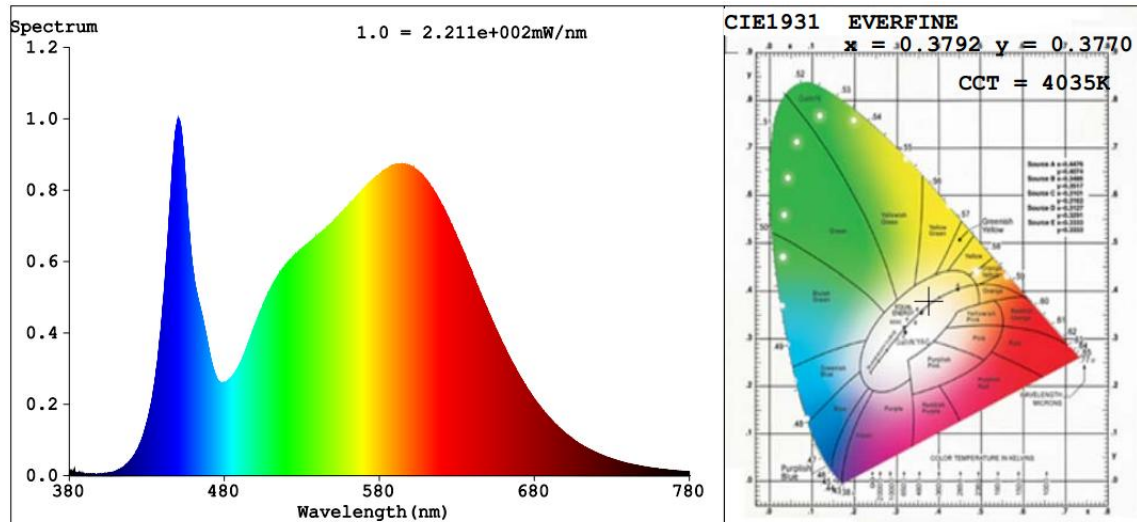
Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

Fax: 8620-32290422

<http://www.standard-tech.com>

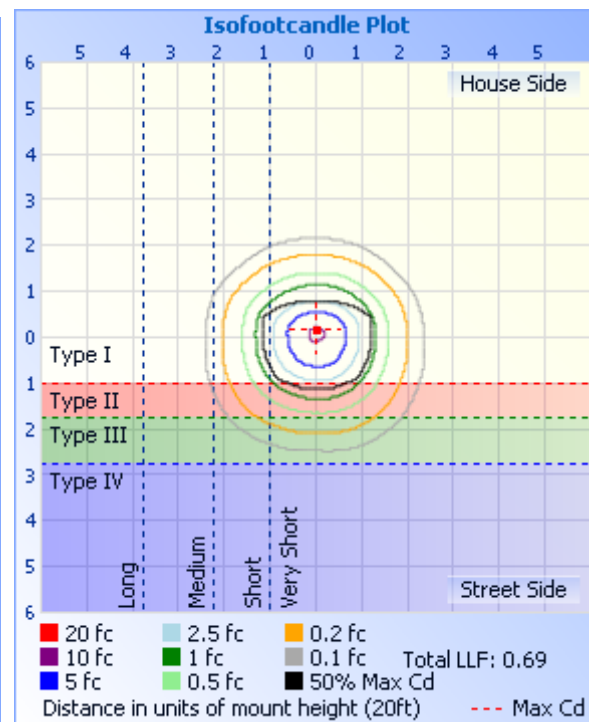
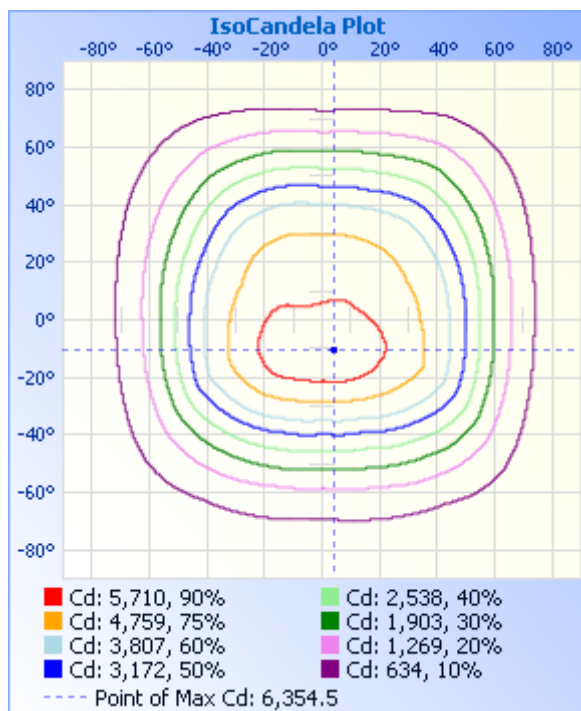
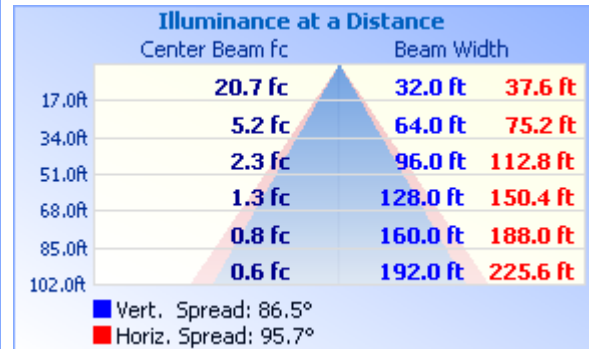
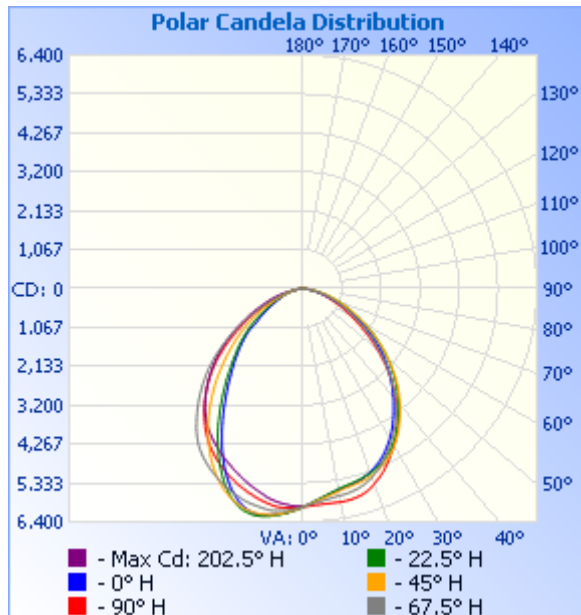
Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	4,680.2	33.6%
0-40	7,449.0	53.4%
0-60	12,023.5	86.2%
60-90	1,923.1	13.8%
70-100	703.6	5%
90-120	0	0%
0-90	13,946.7	100%
90-180	0	0%
0-180	13,946.7	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	569.7	4.1%	90-100	0	0%
10-20	1,653.9	11.9%	100-110	0	0%
20-30	2,456.6	17.6%	110-120	0	0%
30-40	2,768.8	19.9%	120-130	0	0%
40-50	2,581.3	18.5%	130-140	0	0%
50-60	1,993.3	14.3%	140-150	0	0%
60-70	1,219.5	8.7%	150-160	0	0%
70-80	573.6	4.1%	160-170	0	0%
80-90	130.0	0.9%	170-180	0	0%



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

<http://www.standard-tech.com>

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	5984	5984	5984	5984	5984	5984	5984	5984	5984	5984	5984	5984	5984	5984	5984	5984
5	6026	5925	5855	5793	5760	5753	5785	5843	5938	6014	6089	6145	6185	6196	6176	6114
10	5951	5793	5717	5646	5605	5572	5639	5762	5939	6075	6188	6242	6301	6339	6284	6125
15	5788	5577	5555	5571	5510	5479	5548	5691	5895	6109	6238	6196	6205	6298	6235	6037
20	5579	5348	5374	5438	5356	5377	5459	5507	5698	5979	6107	5881	5796	5956	6012	5880
25	5338	5116	5150	5198	5100	5198	5277	5192	5363	5700	5734	5342	5175	5377	5635	5667
30	5050	4858	4895	4847	4744	4913	4983	4813	4966	5291	5153	4671	4440	4678	5122	5404
35	4670	4565	4583	4423	4306	4526	4582	4413	4509	4785	4467	3953	3711	3942	4535	5042
40	4201	4182	4191	3947	3834	4064	4120	3927	3941	4209	3746	3276	3079	3259	3895	4527
45	3688	3702	3740	3450	3362	3567	3620	3369	3353	3564	3061	2697	2565	2675	3246	3957
50	3114	3176	3246	2955	2867	3044	3065	2780	2713	2906	2427	2197	2086	2185	2622	3351
55	2466	2610	2713	2442	2343	2507	2502	2210	2089	2221	1882	1709	1516	1725	2068	2679
60	1836	2022	2171	1915	1814	1969	1951	1688	1544	1598	1382	1192	1124	1242	1542	1984
65	1306	1493	1643	1435	1338	1461	1464	1243	1097	1092	917	874	814	914	1048	1374
70	860	1039	1168	1008	861	1046	1043	875	757	729	611	626	589	654	674	883
75	545	662	753	604	512	640	687	574	491	451	400	425	413	444	430	546
80	271	324	380	292	248	318	354	281	246	239	239	259	256	269	252	274
85	110	115	119	82.6	67.4	89.0	106	112	88.8	89.6	105	131	140	134	112	99.4
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

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

<http://www.standard-tech.com>

BUG Rating: B3-U0-G1**IESNA Luminaire Flux Distribution Table:**

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	2261.8	16.2
FM - Front-Medium(30-60)	3883.2	27.8
FH - Front-High(60-80)	1040.4	7.5
FVH - Front-Very High(80-90)	64.29	0.5
Total Forward Light	7249.8	52.0

BL - Back-Low(0-30)	2418.5	17.3
BM - Back-Medium(30-60)	3462	24.8
BH - Back-High(60-80)	752.62	5.4
BVH - Back-Very High(80-90)	65.708	0.5
Total Back Light	6698.8	48.0

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	B3-U0-G1
---------------------------	----------

Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	6698.8	0	6698.8
Street Side	7249.8	0	7249.8

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	TLWMK1205WMZZ		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	1.028	122.7	0.9945	8.14
BM2	277.0	60	0.4716	122.3	0.9363	14.34
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

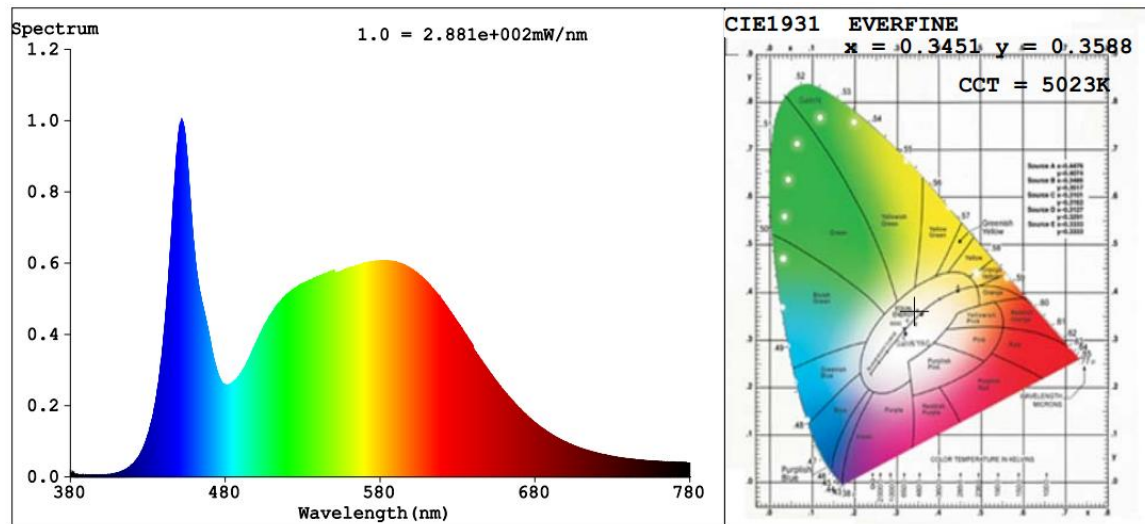
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	12
Frequency (Hz)	60	R2	89	R10	73
CCT (K)	5023	R3	93	R11	83
Duv	0.0036	R4	83	R12	62
Chromaticity (x, y)	x=0.3451 y=0.3588	R5	83	R13	84
Chromaticity (u', v')	u'=0.2087 v'=0.4881	R6	84	R14	96
Color Rendering Index (CRI)	83.9	R7	88	R15	77
R9	12	R8	69	--	--

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)	14227	14071	>=300 (-10%)	
Luminous Efficacy (lm/W)	115.95	115.05	Standard: >= 100(-3%)	Premium: >= 120(-3%)

Spectral Power Distribution & Chromaticity Diagram



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

<http://www.standard-tech.com>

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 *******

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

<http://www.standard-tech.com>