

**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): TLWMK12XYZZ

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: TLWMK123WMZZ  
TLWMK125WMZZ

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

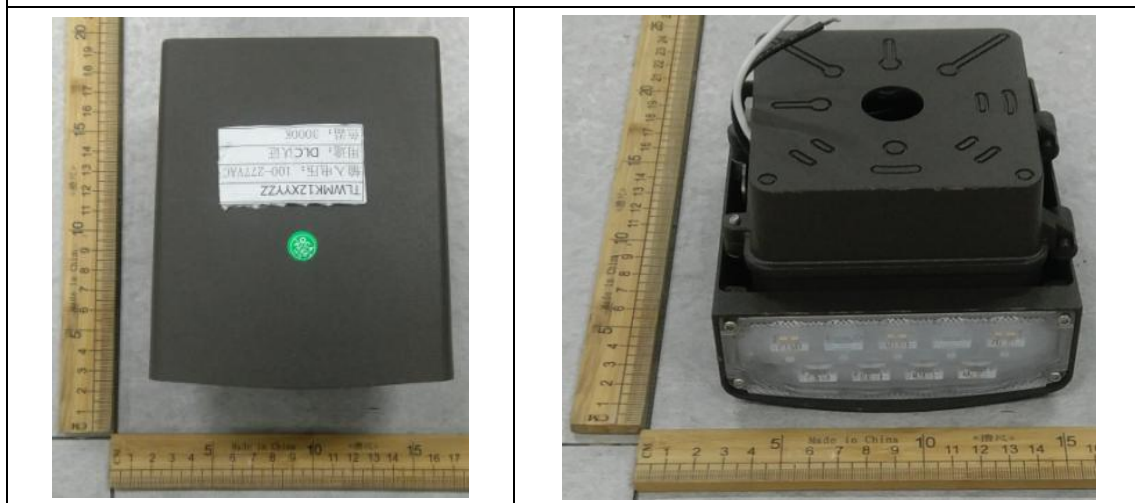
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**1.1 Product Information:**

Organization Name	DONGGUAN THAILIGHT SEMICONDUCTOR LIGHTING CO.,LTD	
Brand Name	THAILIGHT	
Model Number	TLWMK12XYZZ	
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	12W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	L130-2780003000W21	
Sample Number	GZE161105-BF1(3000K),BF2(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	TLWMK123WMZZ		

**Electrical Measurement :**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-BF1	120.0	60	0.0990	11.78	0.9912	9.54
	277.0	60	0.0484	12.26	0.9140	12.29
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)	3095	R3	97	R11	81
Duv	0.0006	R4	82	R12	71
Chromaticity (x, y)	x=0.4312 y=0.4036	R5	82	R13	84
Chromaticity (u', v')	u'=0.2471 v'=0.5203	R6	88	R14	99
Color Rendering Index (CRI)	83.4	R7	84	R15	75
R9	11	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)	1249.9	1211.3	>=300 (-10%)	
Luminous Efficacy (lm/W)	106.10	98.80	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 (°)	94.0	--	--	
Center Beam Candle Power (cd)	562	--	--	

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

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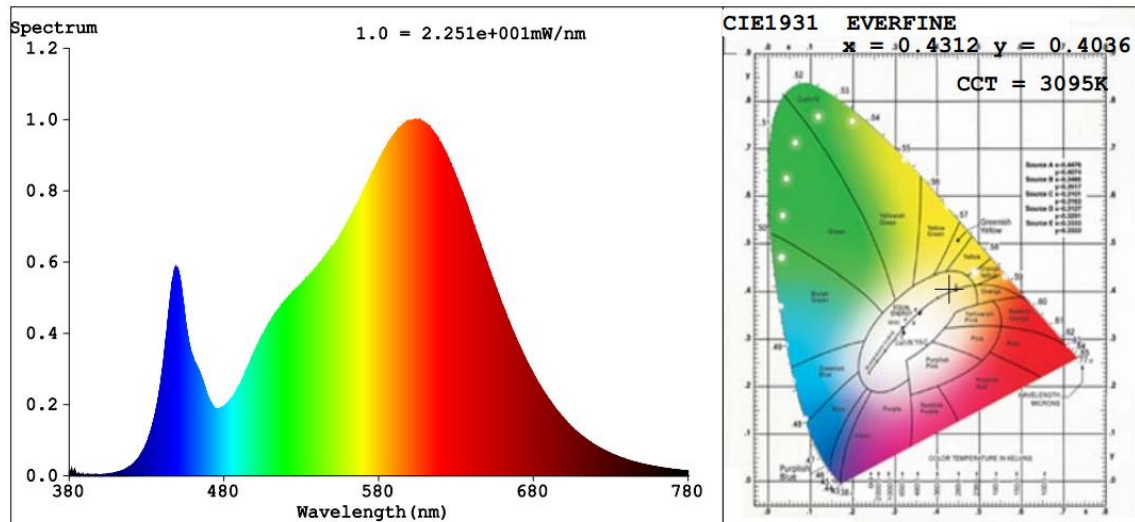
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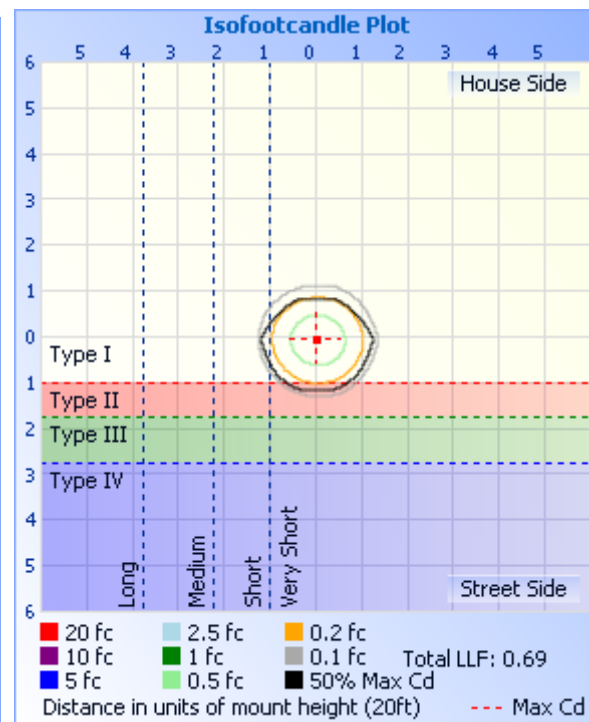
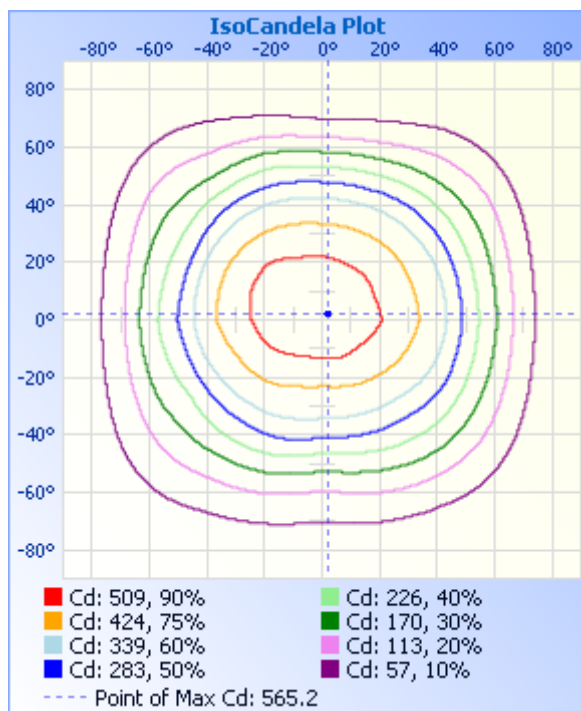
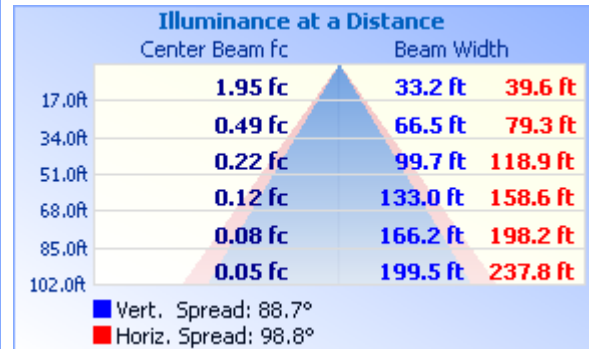
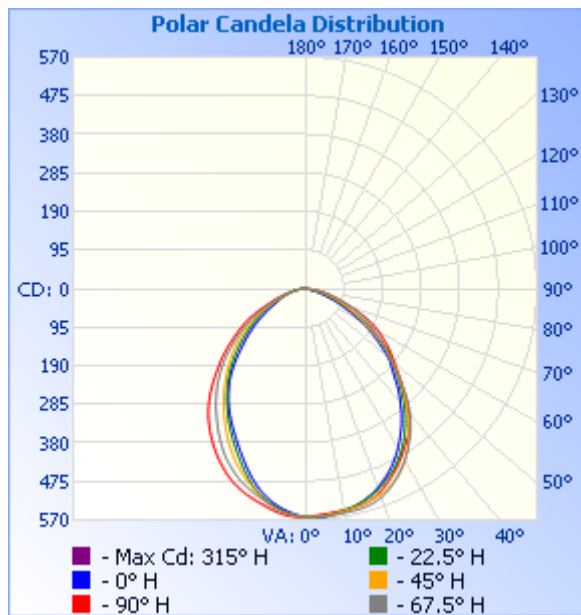
## Spectral Power Distribution &amp; Chromaticity Diagram



## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	418.0	33.4%
0-40	664.0	53.1%
0-60	1,075.9	86.1%
60-90	173.9	13.9%
70-100	60.9	4.9%
90-120	0	0%
0-90	1,249.8	100%
90-180	0	0%
0-180	1,249.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	52.8	4.2%	90-100	0	0%
10-20	148.4	11.9%	100-110	0	0%
20-30	216.8	17.3%	110-120	0	0%
30-40	246.0	19.7%	120-130	0	0%
40-50	230.8	18.5%	130-140	0	0%
50-60	181.1	14.5%	140-150	0	0%
60-70	112.9	9.0%	150-160	0	0%
70-80	49.7	4.0%	160-170	0	0%
80-90	11.3	0.9%	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	562	562	562	562	562	562	562	562	562	562	562	562	562	562	562	562
5	560	561	564	563	564	561	561	563	557	554	551	549	548	552	555	553
10	545	546	553	554	556	554	556	561	554	544	534	527	525	532	536	536
15	530	528	536	539	543	543	549	558	550	534	514	498	489	501	505	515
20	510	507	514	515	522	526	540	547	534	513	488	459	446	459	472	491
25	482	478	487	487	493	501	521	522	507	479	453	418	404	416	434	460
30	449	445	453	451	456	468	490	489	474	439	408	379	367	376	392	421
35	411	408	410	411	413	427	445	449	441	392	363	344	329	335	349	380
40	368	365	362	363	364	380	390	401	396	346	317	307	286	294	307	340
45	317	316	313	313	312	328	334	338	339	293	271	264	235	251	265	296
50	267	265	265	262	270	280	280	275	288	240	228	217	187	206	225	249
55	217	216	213	208	211	230	222	228	247	199	182	171	146	164	183	201
60	173	171	164	153	154	175	168	188	206	167	141	128	105	125	140	156
65	123	128	118	103	102	121	122	150	158	128	98.8	91.4	75.8	90.2	94.0	109
70	79.3	84.8	76.1	63.9	59.0	77.0	85.9	106	104	86.5	68.7	64.3	56.3	61.9	61.9	69.7
75	48.7	45.3	43.6	32.2	26.9	41.9	55.2	64.3	68.1	55.0	44.6	44.2	39.0	41.6	37.4	41.8
80	25.1	19.4	19.7	7.73	6.34	13.7	30.5	34.2	41.1	33.5	27.6	29.1	26.2	26.1	22.3	22.7
85	5.21	5.63	2.93	0.37	0.27	1.38	7.15	12.4	17.5	15.7	14.5	16.9	15.2	14.4	10.0	6.19
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: B1-U0-G0****IESNA Luminaire Flux Distribution Table:**

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	217.13	17.4
FM - Front-Medium(30-60)	353.21	28.3
FH - Front-High(60-80)	84.578	6.8
FVH - Front-Very High(80-90)	3.4709	0.3
Total Forward Light	658.39	52.7

BL - Back-Low(0-30)	200.9	16.1
BM - Back-Medium(30-60)	304.84	24.4
BH - Back-High(60-80)	77.989	6.2
BVH - Back-Very High(80-90)	7.8145	0.6
Total Back Light	591.54	47.3

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	B1-U0-G0
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	591.54	0	591.54
Street Side	658.39	0	658.39

**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	TLWMK125WMZZ		

**Electrical Measurement :**

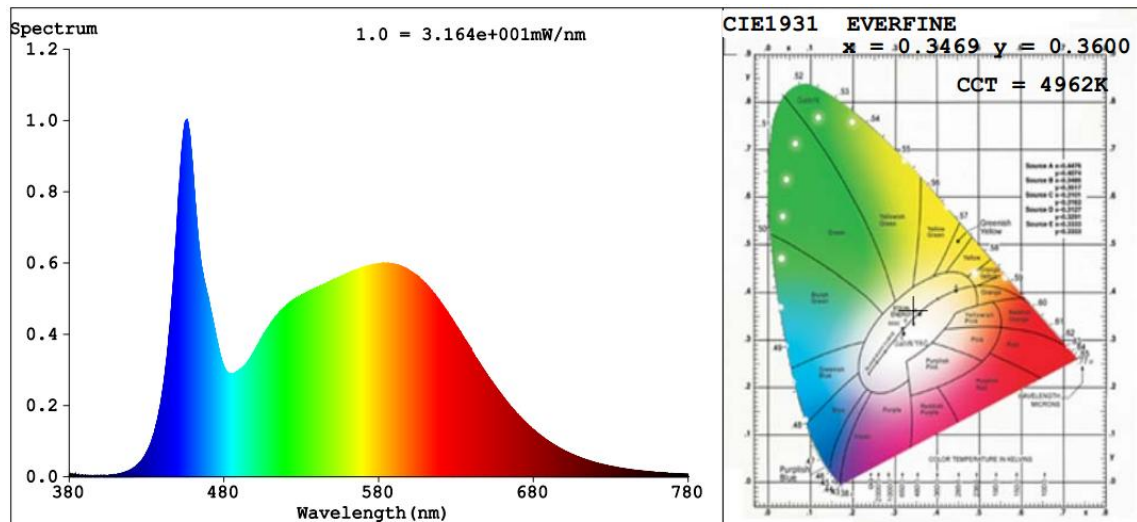
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-BF2	120.0	60	0.0997	11.86	0.9917	9.58
	277.0	60	0.0487	12.34	0.9145	12.33
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

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

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	13
Frequency (Hz)	60	R2	92	R10	80
CCT (K)	4962	R3	95	R11	78
Duv	0.0035	R4	79	R12	55
Chromaticity (x, y)	x=0.3469 y=0.3600	R5	81	R13	86
Chromaticity (u', v')	u'=0.2094 v'=0.4890	R6	87	R14	98
Color Rendering Index (CRI)	83.9	R7	86	R15	77
R9	13	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)	1321	1280	>=300 (-10%)	
Luminous Efficacy (lm/W)	111.38	103.73	Standard: >= 90(-3%)	Premium: >= 110(-3%)

**Spectral Power Distribution & Chromaticity Diagram****Laboratory: Standard-Tech Co. Ltd Testing Center****NVLAP CODE: 201011-0**

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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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