

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN, LLC**(Brand Name: N/A)**

188 S.Northwest Highway, Cary, IL60013, USA

LED Lamps

Model name(s): LED-7330-27K-G2

Representative (Tested) Model: LED-7330-27K-G2

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

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Apr.25,2018

Review By:

Univ Xie

Manager: Univ Xie

Note: 1. The results contained in this report pertain only to the tested samples.

2. 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

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

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN, LLC	
Brand Name	N/A	
Model Number	LED-7330-27K-G2	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120 -277Vac, 50/60 Hz	
Nominal Power	11W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K	
LED Manufacturer	Everlight Electronics Co., LTD	
LED Model	67-21S/KK5C-H272433Z6-2T	
Sample Number	GZE1711047-H-K1	
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	Apr.11,2018
Date of Test	Apr.12,2018
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	2018-04-12	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-7330-27K-G2		

Electrical Measurement:

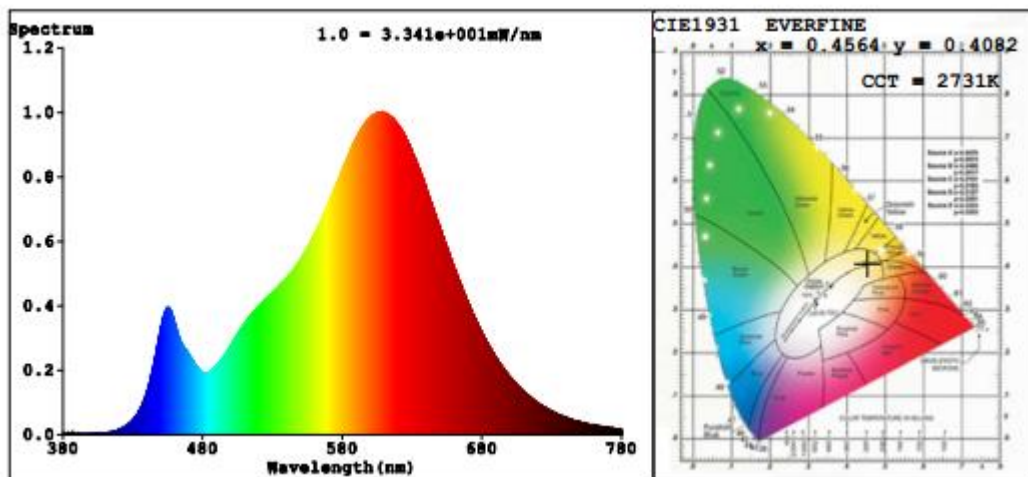
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE171104	120.0	60	0.0670	7.900	0.9829	9.69
7-H-K1	277.0	60	0.0325	8.085	0.8989	16.76

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	14
Frequency (Hz)	60	R2	93	R10	85
CCT (K)	2731	R3	95	R11	81
Duv	-0.0006	R4	81	R12	77
Chromaticity (x, y)	x=0.4564 y=0.4082	R5	83	R13	85
Chromaticity (u', v')	u'=0.2613 v'=0.5259	R6	93	R14	98
Color Rendering Index (CRI)	83.6	R7	82	R15	75
R9	14	R8	60	--	--

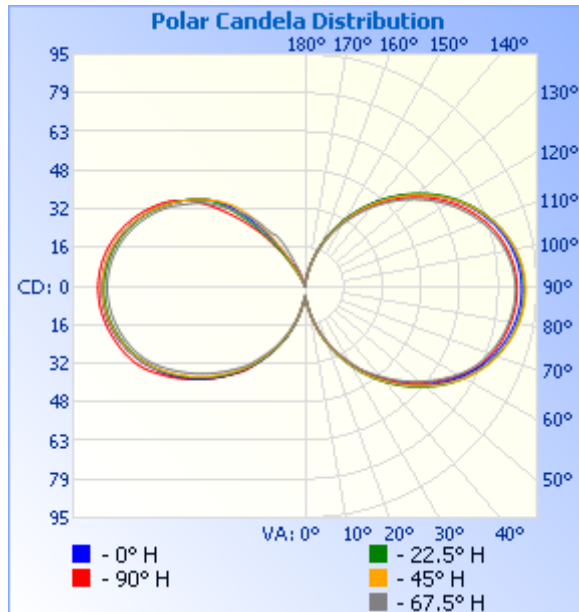
Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	770.88	759.10
Luminous Efficacy (lm/W)	97.58	93.89
Beam Angle (°)	275.3	--
Center Beam Candle Power (cd)	4	--

Spectral Power Distribution & Chromaticity Diagram

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	18.9	2.5%
0-40	45.3	5.9%
0-60	146.3	19%
60-90	254.7	33%
70-100	271.7	35.2%
90-120	249.2	32.3%
0-90	401.0	52%
90-180	369.9	48%
0-180	770.9	100%

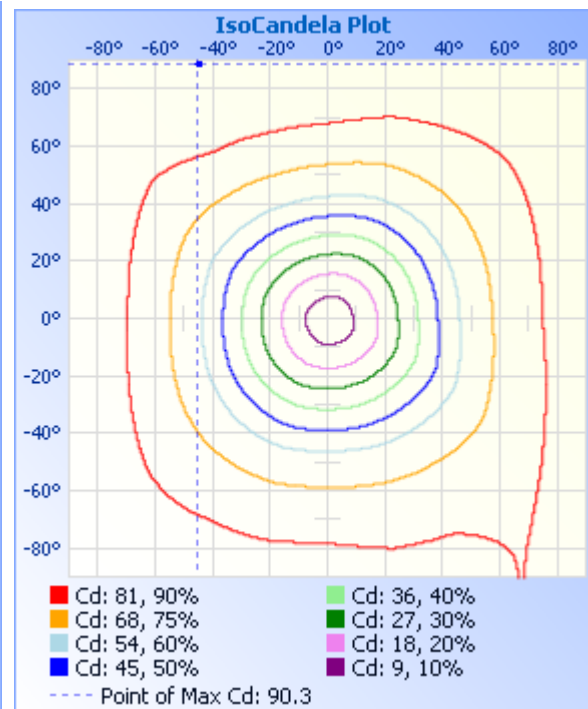
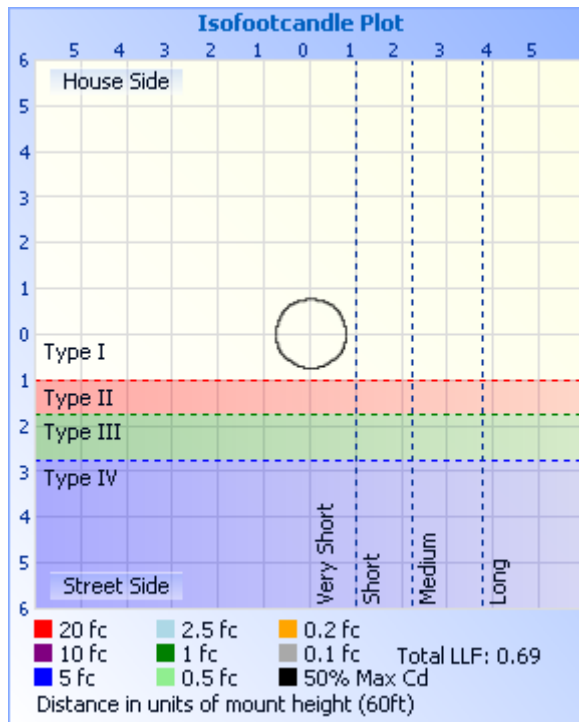
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.7	0.1%	90-100	92.2	12%
10-20	4.8	0.6%	100-110	85.0	11%
20-30	13.4	1.7%	110-120	72.1	9.3%
30-40	26.3	3.4%	120-130	55.4	7.2%
40-50	42.0	5.4%	130-140	37.0	4.8%
50-60	59.1	7.7%	140-150	19.5	2.5%
60-70	75.2	9.8%	150-160	7.2	0.9%
70-80	86.7	11.2%	160-170	1.6	0.2%
80-90	92.7	12.0%	170-180	0.1	0%

Photometric Data


Illuminance at a Distance

	Center Beam fc	Beam Width
10.0ft	0.04 fc	0.3 ft
20.0ft	0.01 fc	0.5 ft
30.0ft	0.00 fc	0.8 ft
40.0ft	0.00 fc	1.0 ft
50.0ft	0.00 fc	1.3 ft
60.0ft	0.00 fc	1.6 ft

■ Beam Spread: 1.5°



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>

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338	
0	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	
5	6.23	6.23	6.20	6.28	6.46	6.59	6.59	6.60	6.65	6.60	6.37	6.18	6.09	6.01	5.90	5.87	
10	10.3	10.4	10.3	10.5	11.0	11.3	11.2	11.0	11.0	10.8	10.6	10.3	10.3	10.2	9.93	9.66	
15	15.8	15.8	15.8	16.1	16.9	17.3	17.1	16.6	16.6	16.4	16.1	15.6	15.8	15.7	15.3	14.8	
20	21.8	21.8	21.8	22.2	23.4	23.9	23.6	22.7	22.9	22.4	22.0	21.5	21.9	21.7	21.2	20.4	
25	28.1	28.2	28.2	28.6	30.1	30.8	30.3	29.0	29.3	28.6	28.2	27.6	28.2	28.0	27.5	26.4	
30	34.5	34.7	34.7	35.2	37.0	37.7	37.2	35.8	36.0	35.0	34.5	33.9	34.6	34.3	33.7	32.3	
35	41.7	41.9	41.8	41.9	43.7	44.6	44.2	42.5	43.0	41.7	41.1	40.4	40.9	40.6	40.1	38.9	
40	47.3	47.6	47.7	48.2	50.4	51.3	50.6	48.5	49.2	47.9	47.1	46.2	47.1	46.7	46.1	44.4	
45	53.4	53.7	53.9	54.4	56.9	57.8	57.2	54.7	55.5	54.1	53.2	52.3	53.1	52.7	52.0	50.1	
50	59.4	59.7	60.0	60.4	63.0	64.2	63.6	60.8	61.7	60.0	59.1	58.2	58.9	58.4	57.8	55.8	
55	65.3	65.7	65.9	66.2	68.8	70.1	69.7	66.8	67.6	65.8	64.8	63.8	64.4	63.8	63.4	61.5	
60	71.0	71.2	71.5	71.6	74.0	75.4	75.4	72.4	73.2	71.2	70.2	68.9	69.3	68.7	68.7	66.9	
65	75.9	76.0	76.4	76.4	78.6	79.9	80.2	77.1	78.0	76.1	75.1	73.6	73.6	73.0	73.3	71.7	
70	79.0	79.0	79.7	80.0	82.3	83.6	83.8	80.4	81.3	79.3	78.7	77.3	77.2	76.5	76.9	75.1	
75	81.5	81.4	82.4	82.8	85.2	86.5	86.7	83.0	83.8	81.7	81.3	80.1	80.0	79.2	79.7	77.7	
80	83.4	83.3	84.4	84.9	87.3	88.6	88.8	84.9	85.6	83.3	83.1	82.0	82.0	81.1	81.7	79.6	
85	84.5	84.5	85.6	86.1	88.5	89.7	90.0	86.0	86.7	84.4	84.2	83.1	83.0	82.2	82.9	80.8	
90	84.8	84.8	85.9	86.4	88.7	89.9	90.3	86.2	86.8	84.5	84.4	83.3	83.2	82.4	83.2	81.1	
95	84.2	84.2	85.3	85.7	88.0	89.1	89.4	85.3	86.1	83.8	83.5	82.6	82.6	81.8	82.6	80.6	
100	82.7	82.6	83.7	84.0	86.3	87.4	87.5	83.5	84.3	82.1	81.7	80.9	81.0	80.3	81.1	79.1	
105	80.2	80.2	81.0	81.3	83.6	84.6	84.6	80.7	81.7	79.5	79.0	78.3	78.5	78.0	78.6	76.7	
110	76.8	76.9	77.5	77.7	80.0	80.9	80.7	76.9	78.1	76.0	75.5	74.8	75.2	74.8	75.3	73.5	
115	72.7	72.8	73.2	73.3	75.6	76.4	75.9	72.4	73.7	71.8	71.2	70.6	71.1	70.9	71.2	69.4	
120	67.8	65.8	68.2	68.2	70.5	71.2	70.5	67.2	68.7	66.9	66.2	65.7	66.4	66.3	66.4	64.8	
125	61.3	56.6	62.6	62.6	64.7	65.4	64.6	61.5	63.0	61.4	60.6	60.2	61.1	61.1	61.1	58.7	
130	51.7	46.8	56.6	56.5	58.5	59.0	58.1	55.3	56.8	55.3	54.6	54.3	55.3	55.3	55.2	52.8	
135	40.0	36.5	50.2	50.1	51.8	52.3	51.3	48.8	50.2	48.9	48.3	48.0	48.0	46.0	48.9	45.4	
140	29.0	26.1	43.4	43.4	44.8	45.2	44.2	42.1	43.3	42.3	41.8	38.6	36.6	32.2	41.0	38.4	
145	17.7	16.1	36.6	36.5	37.7	38.0	37.1	35.3	36.3	35.5	34.9	28.3	23.9	18.5	26.7	30.5	
150	9.13	7.48	29.7	29.7	30.6	30.8	30.0	28.5	29.3	28.7	26.9	18.2	11.6	5.42	10.9	24.2	
155	8.99	4.37	22.9	22.4	23.5	23.6	22.9	21.8	22.4	22.0	19.3	9.17	1.76	0.03	0.31	13.9	
160	4.45	2.27	13.3	15.0	16.6	16.6	16.1	15.3	15.7	15.5	12.6	2.58	0.03	0.02	0.04	1.12	
165	0.25	0.71	2.52	10.2	10.1	10.0	9.68	9.24	9.45	9.37	6.82	0.02	0.02	0.02	0.03	0.05	
170	0.03	0.05	0.04	3.28	4.53	4.36	4.18	4.08	4.12	4.09	2.91	0.01	0.02	0.01	0.01	0.02	
175	0.02	0.02	0.02	0.02	0.07	0.07	0.00	0.01	0.01	0.06	0.03	0.00	0.01	0.01	0.00	0.01	
180	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06
Expand Uncertainty: Photometric Measurement (Sphere):2.04%, k=2 Chromaticity Measurement(Sphere):28.8K, k=2 Photometric Measurement(Goniophotometer):2.36%, k=2			

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