LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN, LLC

(Brand Name: N/A)

188 S.Northwest Highway, Cary, IL60013, USA

LED Luminaires

Model name(s): LED-7300-27K-G2

Representative (Tested) Model: LED-7300-27K-G2

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

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Apr.08,2018

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.

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN, LLC	
Brand Name	N/A	
Model Number	LED-7300-27K-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	5W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K	
LED Manufacturer	Everlight Electronics Co., LTD	
LED Model	67-21S/KK5C-H272433Z6-2T	
Sample Number	GZE1711047-H-D1	
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	Jan.03,2018
Date of Test	Jan.05,2018
Test item	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	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 °C ±1 °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 ºC ±1 ºC. 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 ºC ±1 ºC. 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	2018-01-05	Test Ambient:	25.2 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-7300-27K-G2		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE1711047-H-D1	120.0	60	0.0454	4.605	0.8460	64.81
	277.0	60	0.0279	5.762	0.7450	80.76

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2671
Duv	-0.0007
Chromaticity (x, y)	x=0.4611 y=0.4090
Chromaticity (u', v')	u'=0.2640 v'=0.5269
Color Rendering Index (CRI)	85.2
R9	21

Special Color Rendering Indices			
R1	85	R9	21
R2	96	R10	90
R3	93	R11	83
R4	83	R12	80
R5	86	R13	88
R6	96	R14	97
R7	82	R15	78
R8	62	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	549.09	610.49
Luminous Efficacy (lm/W)	119.24	105.95
Beam Angle (°)	277.8	--
Center Beam Candle Power (cd)	4	--

Spectral Power Distribution & Chromaticity Diagram

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	14.5	2.6%
0-40	33.7	6.1%
0-60	106.2	19.3%
60-90	179.4	32.7%
70-100	191.0	34.8%
90-120	174.1	31.7%
0-90	285.6	52%
90-180	263.6	48%
0-180	549.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.7	0.1%	90-100	64.6	11.8%
10-20	3.8	0.7%	100-110	59.3	10.8%
20-30	10.1	1.8%	110-120	50.1	9.1%
30-40	19.2	3.5%	120-130	38.6	7%
40-50	30.3	5.5%	130-140	26.5	4.8%
50-60	42.2	7.7%	140-150	15.6	2.8%
60-70	53.0	9.7%	150-160	7.0	1.3%
70-80	61.1	11.1%	160-170	1.7	0.3%
80-90	65.2	11.9%	170-180	0.1	0%

Photometric Data

Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46
5	6.19	6.22	6.25	6.19	6.06	5.95	5.81	5.67	5.44	5.40	5.43	5.56	5.74	5.93	6.10	6.18
10	9.16	9.40	9.51	9.42	9.09	9.01	8.86	8.58	8.03	8.01	8.13	8.33	8.49	8.92	9.22	9.33
15	12.9	13.4	13.6	13.5	13.0	13.0	12.9	12.5	11.6	11.7	11.9	12.1	12.1	12.9	13.3	13.4
20	17.1	17.7	18.0	17.9	17.2	17.5	17.4	16.9	15.7	15.8	16.1	16.3	16.3	17.2	17.7	17.7
25	21.2	22.1	22.5	22.4	21.6	22.2	22.0	21.5	19.9	20.2	20.5	20.7	20.5	21.7	22.2	22.2
30	25.3	26.6	27.0	27.1	26.0	26.9	26.8	26.2	24.2	24.7	25.0	25.2	24.8	26.3	26.8	26.7
35	29.4	30.9	31.5	31.6	30.4	31.5	31.5	30.8	28.4	29.0	29.3	29.7	29.0	30.8	31.2	31.2
40	33.5	35.3	35.9	36.1	34.7	36.2	36.1	35.4	32.6	33.4	33.7	34.1	33.2	35.2	35.6	35.5
45	37.5	39.5	40.2	40.6	39.1	40.7	40.6	39.9	36.8	37.7	37.9	38.4	37.4	39.5	39.8	39.8
50	41.3	43.5	44.3	44.8	43.2	45.1	44.9	44.2	40.8	41.9	42.0	42.6	41.4	43.6	43.9	43.9
55	44.9	47.3	48.1	48.7	47.1	49.1	48.8	48.2	44.6	45.7	45.8	46.5	45.2	47.5	47.6	47.6
60	48.1	50.6	51.4	52.3	50.7	52.9	52.4	51.8	48.0	49.2	49.1	50.0	48.6	51.0	51.0	51.0
65	50.9	53.5	54.3	55.3	53.7	55.9	55.4	55.0	50.9	52.0	52.0	53.1	51.7	54.1	53.9	54.0
70	53.2	55.9	56.6	57.8	56.2	58.4	58.0	57.6	53.4	54.4	54.4	55.7	54.2	56.6	56.3	56.5
75	55.1	57.7	58.4	59.8	58.1	60.4	59.9	59.7	55.3	56.3	56.3	57.7	56.3	58.6	58.1	58.4
80	56.3	58.9	59.6	61.1	59.5	61.8	61.2	61.1	56.7	57.7	57.6	59.1	57.7	60.0	59.4	59.7
85	56.9	59.5	60.1	61.8	60.2	62.5	61.9	61.9	57.4	58.4	58.3	59.8	58.4	60.7	60.0	60.3
90	56.9	59.4	60.1	61.8	60.3	62.6	62.0	62.0	57.6	58.6	58.4	59.9	58.5	60.7	60.0	60.3
95	56.2	58.8	59.4	61.1	59.7	62.0	61.4	61.4	57.1	58.1	57.9	59.3	57.9	60.1	59.4	59.6
100	55.0	57.5	58.2	59.7	58.3	60.7	60.2	60.2	55.9	56.9	56.7	58.1	56.7	58.8	58.1	58.3
105	53.0	55.5	56.2	57.7	56.3	58.7	58.3	58.2	54.1	55.1	55.0	56.2	54.7	56.8	56.2	56.3
110	50.5	52.9	53.7	55.0	53.7	56.0	55.8	55.6	51.6	52.6	52.6	53.7	52.2	54.2	53.7	53.7
115	47.5	49.7	50.6	51.8	50.4	52.7	52.7	52.4	48.6	49.7	49.7	50.6	49.1	51.0	50.7	50.6
120	44.1	46.1	47.1	48.0	46.8	49.0	49.1	48.7	45.2	46.2	46.4	47.0	45.5	47.4	47.2	47.0
125	40.3	42.2	43.1	43.9	42.7	44.8	45.0	44.6	41.4	42.4	42.6	43.1	41.6	43.4	43.3	43.0
130	36.2	37.9	38.7	39.4	38.3	40.4	40.5	40.2	37.3	38.3	38.5	38.8	37.5	39.0	38.9	38.6
135	31.9	33.3	34.1	34.7	33.8	35.6	35.8	35.5	33.0	33.9	34.1	34.3	33.1	34.4	34.3	34.0
140	27.5	28.6	29.4	29.8	29.1	30.7	30.9	30.6	28.6	29.4	29.6	29.7	28.7	29.6	29.7	29.3
145	23.1	23.9	24.6	24.9	24.4	25.7	26.0	25.8	24.2	24.8	25.0	25.0	24.3	24.9	24.9	24.6
150	18.6	19.2	19.5	19.9	18.5	19.2	21.1	20.9	19.7	20.1	20.3	20.3	19.9	20.1	20.2	19.9
155	13.4	14.5	13.5	12.2	13.0	13.8	16.1	16.1	15.3	15.5	15.6	15.6	15.4	15.3	15.4	15.2
160	9.67	10.0	6.63	5.02	6.59	8.96	11.0	11.4	11.0	11.1	11.2	11.2	11.0	10.9	10.8	10.6
165	5.40	5.71	3.00	2.74	1.49	3.01	6.51	7.05	6.97	7.02	6.99	6.94	6.88	6.76	6.57	6.38
170	2.43	1.27	1.24	0.16	0.13	1.49	2.57	3.20	3.38	3.42	3.30	3.25	3.19	3.19	2.90	2.69
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	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

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 ********