

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN, LLC

(Brand Name: LIGHT EFFICIENT DESIGN)

188 S.Northwest Highway, Cary, IL60013, USA

LED Lamp

Model name(s): LED-7311-27K-G3

Representative (Tested) Model: LED-7311-27K-G3

Model Different: N/A

Test & Report By:

Ferrum Li

Engineer: Ferrum Li

Date: Sept.01,2020

Review By:


Garman Mo

Manager: Garman Mo

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 A2LA, or any agency of the Federal Government.

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN, LLC	
Brand Name	LIGHT EFFICIENT DESIGN	
Model Number	LED-7311-27K-G3	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Lamp	
Base Type	G23-2	
Rated Voltage / Frequency	120-277Vac, 50/60Hz	
Nominal Power	7W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K	
LED Manufacturer	EVERLIGHT ELECTRONICS CO., LTD	
LED Model	67-21S/KK7C-H276034Z15/DT(GC)	
Sample Number	JBE200709-AA1	
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	Aug.11,2020
Date of Test	Aug.14,2020
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

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

Test date	2020-08-14	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-7311-27K-G3	Total Operating Time (min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE200709-AA1	120.0	60	0.0685	8.141	0.9910	12.70
	277.0	60	0.0310	7.931	0.9250	23.91

Chromaticity Measurement - Sphere-Spectroradiometer

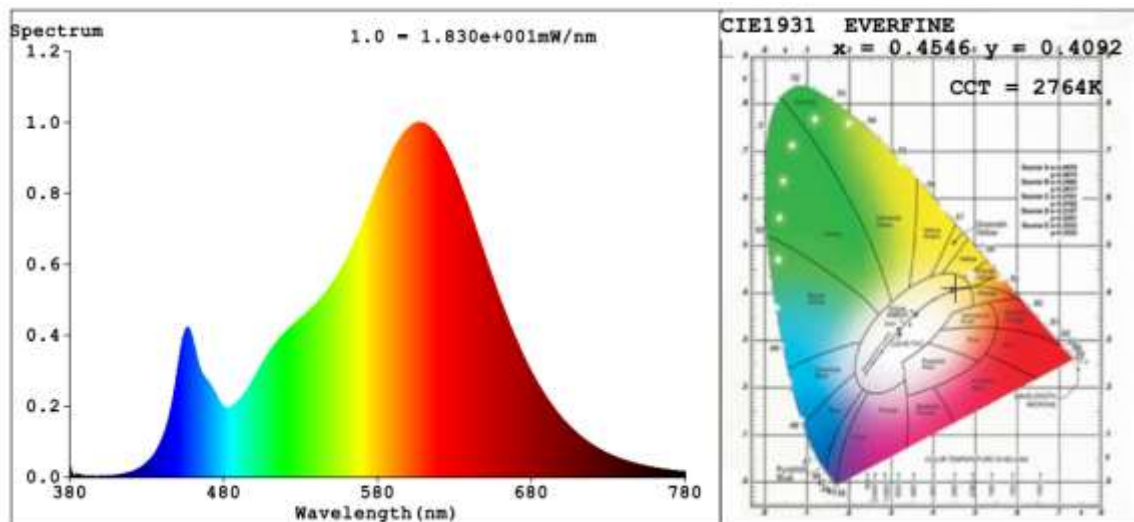
Method(Self-absorption:1.0138)(4 π geometry):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	83	R9	13
Frequency (Hz)	60	R2	94	R10	86
CCT (K)	2764	R3	94	R11	81
Duv	-0.0000	R4	81	R12	77
Chromaticity (x, y)	x=0.4546 y=0.4092	R5	83	R13	86
Chromaticity (u', v')	u'=0.2597 v'=0.5260	R6	93	R14	98
Color Rendering Index (CRI)	83.7	R7	82	R15	75
R9	13	R8	59	--	--

Photometric Measurement – Goniophotometer Method(Test Distance: 1.900m):

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	837.20	849.31
Luminous Efficacy (lm/W)	102.84	107.09
Beam Angle (°)	107.6	--
Center Beam Candle Power (cd)	292	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	223.6	26.7%
0-40	362.6	43.3%
0-60	628.6	75.1%
60-90	192.0	22.9%
70-100	103.9	12.4%
90-120	14.1	1.7%
0-90	820.6	98%
90-180	16.5	2%
0-180	837.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	27.5	3.3%	90-100	8.4	1%
10-20	78.5	9.4%	100-110	3.4	0.4%
20-30	117.6	14.0%	110-120	2.3	0.3%
30-40	139.0	16.6%	120-130	1.4	0.2%
40-50	141.0	16.8%	130-140	0.7	0.1%
50-60	125.0	14.9%	140-150	0.3	0%
60-70	96.5	11.5%	150-160	0.0	0%
70-80	62.7	7.5%	160-170	0.0	0%
80-90	32.8	3.9%	170-180	0.0	0%

Photometric Data

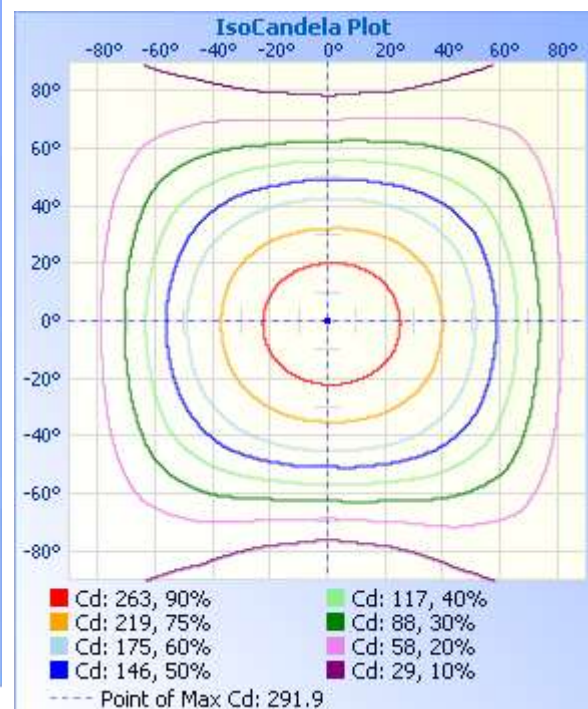
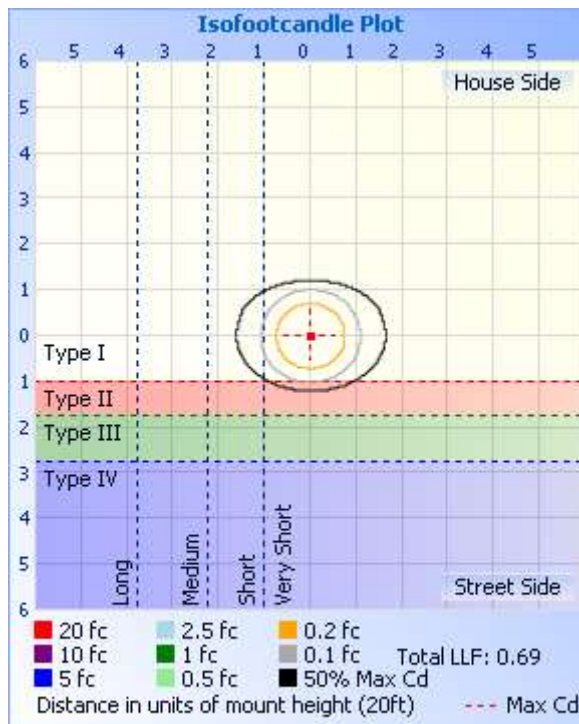
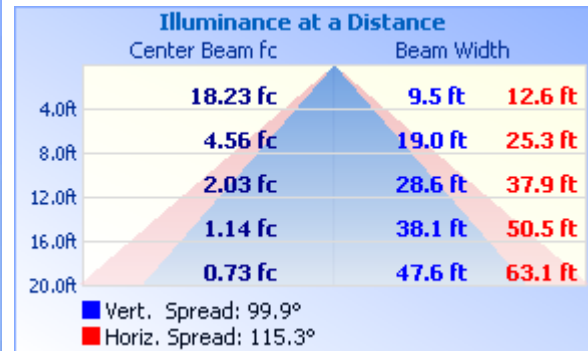
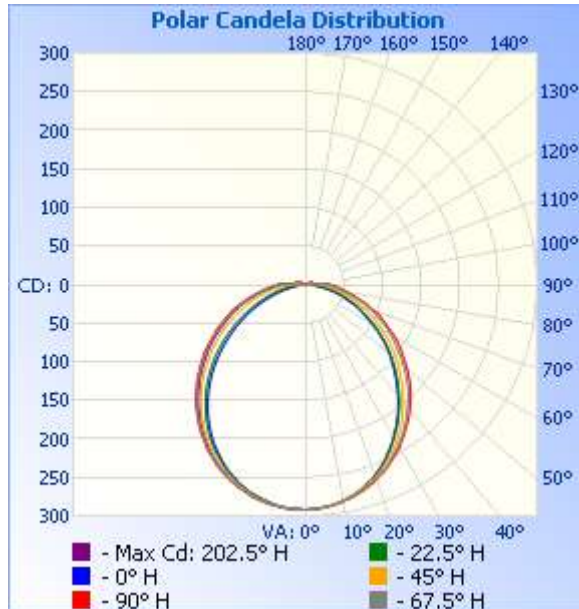


Table--1 UNIT: cd

C (DEG) □ (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	292	292	292	292	292	292	292	292	292	292	292	292	292	292	292	292		
5	291	291	290	290	289	289	289	290	290	290	290	290	290	290	290	291		
10	287	287	286	285	284	285	284	285	285	286	285	285	285	285	287	287		
15	281	281	279	277	275	275	276	278	279	278	278	278	278	278	280	281		
20	273	272	269	266	264	264	266	268	269	269	268	267	266	268	271	273		
25	263	261	256	250	247	248	252	256	257	257	255	253	253	255	258	262		
30	249	247	241	233	229	230	236	241	244	243	240	237	237	239	244	249		
35	235	232	223	213	208	211	218	224	227	227	223	219	217	221	228	233		
40	218	214	203	192	187	189	197	206	211	209	204	198	196	201	209	216		
45	200	195	182	170	165	167	176	188	193	191	184	176	173	179	190	198		
50	180	175	161	149	144	146	156	167	173	171	163	152	148	155	168	179		
55	161	155	140	128	121	124	135	146	152	149	141	127	122	130	146	158		
60	140	134	119	106	98.3	102	114	127	134	130	119	104	97.1	106	124	138		
65	120	114	98.8	85.5	79.2	82.1	93.9	106	112	109	97.8	80.7	73.4	82.6	103	117		
70	101	94.6	80.2	65.7	59.1	63.6	75.6	88.6	91.9	91.6	77.7	59.7	51.1	61.2	82.9	97.5		
75	81.3	76.4	62.5	48.4	41.5	46.1	58.7	68.6	72.4	70.1	59.8	41.1	31.2	42.2	63.7	78.4		
80	63.3	59.0	46.7	32.2	25.2	31.1	43.0	52.6	56.0	53.8	43.4	25.8	14.4	26.4	47.2	60.4		
85	47.2	43.8	33.1	19.1	11.1	18.5	31.1	39.9	43.0	41.0	31.5	14.8	1.77	15.0	33.5	44.9		
90	36.0	32.8	23.2	9.93	2.27	9.88	21.9	29.8	32.8	30.7	22.1	8.00	0.00	8.16	23.5	33.7		
95	10.4	4.62	0.00	2.73	0.01	1.28	5.13	12.3	9.25	0.01	0.00	3.95	0.00	3.53	0.00	0.00		
100	0.04	1.87	10.2	3.39	3.56	3.36	9.77	0.33	0.10	0.06	7.56	2.09	0.00	2.16	7.82	0.09		
105	10.6	1.39	4.00	2.09	4.16	2.11	3.93	1.54	10.2	4.04	1.06	0.48	0.00	0.34	1.10	3.62		
110	7.72	2.07	1.72	1.56	4.01	1.53	1.73	1.73	7.49	6.36	0.05	0.05	0.00	0.04	0.05	6.49		
115	5.64	2.45	0.79	1.33	4.05	1.27	0.82	2.19	5.41	5.84	0.89	0.02	0.01	0.02	0.88	6.15		
120	4.16	2.11	0.80	1.52	3.21	1.11	0.75	1.91	3.99	4.38	1.43	0.12	0.00	0.06	1.47	4.64		
125	3.13	1.77	0.76	1.71	0.02	1.22	0.71	1.61	3.01	3.27	1.53	0.18	0.01	0.19	1.57	3.46		
130	2.42	1.48	0.62	1.03	0.02	1.08	0.56	1.36	2.33	2.47	1.42	0.11	0.01	0.12	1.44	2.62		
135	1.86	1.22	0.54	0.02	0.02	0.02	0.48	1.13	1.82	1.88	1.07	0.01	0.00	0.01	1.09	1.95		
140	1.41	0.96	0.42	0.02	0.02	0.03	0.35	0.90	1.40	1.39	0.74	0.01	0.01	0.01	0.68	1.42		
145	1.02	0.71	0.28	0.10	0.02	0.12	0.19	0.64	1.00	0.96	0.43	0.01	0.01	0.01	0.30	0.94		
150	0.59	0.44	0.04	0.04	0.02	0.04	0.02	0.37	0.61	0.57	0.15	0.00	0.00	0.00	0.00	0.50		
155	0.25	0.13	0.01	0.03	0.01	0.03	0.01	0.08	0.23	0.20	0.01	0.01	0.00	0.00	0.00	0.00		
160	0.01	0.01	0.01	0.02	0.01	0.04	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00		
165	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00		
170	0.01	0.01	0.01	0.04	0.00	0.07	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
175	0.01	0.01	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		

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-423	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-327	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-332	Standard Lamp	2020-07-08	2021-07-07
ST-R-333	Power Meter for Integrating Sphere	2020-06-26	2021-06-25
ST-R-405	Temperature Probe for Integrating Sphere	2020-01-23	2021-01-22
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp	2020-07-08	2021-07-07
ST-R-358	Power Meter for Goniophotometer	2020-06-26	2021-06-25
ST-R-354	hygrothermograph for Goniophotometer	2020-06-27	2021-06-26
Expand Uncertainty: Photometric Measurement (Sphere):3.06%, k=2 Chromaticity Measurement(Sphere):43.46K, k=2 Photometric Measurement(Goniophotometer):3.38%, k=2			

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