

## **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-7311-50K-G3

Representative (Tested) Model: LED-7311-50K-G3

Model Different: N/A

Test & Report By:

*Ferrum Li*

Engineer: Ferrum Li

Date: Sept.01,2020

Review By:

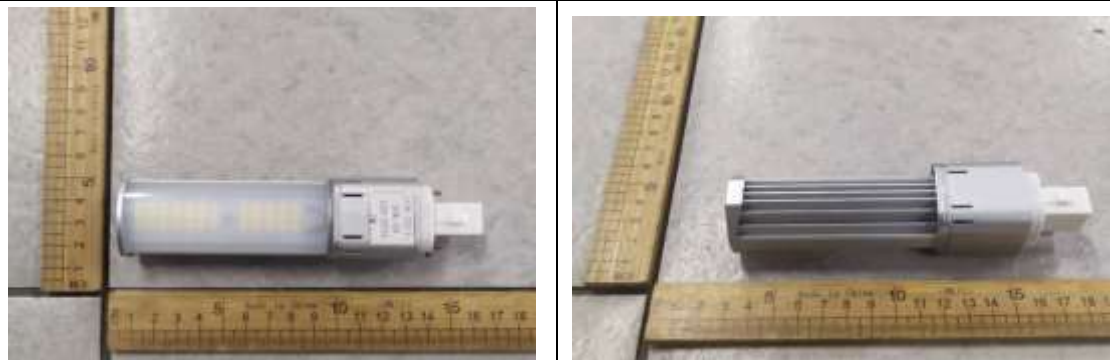
*Garman Mo*

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-7311-50K-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	5000K	
LED Manufacturer	EVERLIGHT ELECTRONICS CO., LTD	
LED Model	67-21S/KK7C-H507034Z15/DT(GC)	
Sample Number	JBE200709-DD1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
<b>Photo</b>		
		

**1.2 Test Specifications:**

Date of Receipt	Aug.20,2020
Date of Test	Aug.24,2020
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>

**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**

Test date	2020-08-24	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-7311-50K-G3	Total Operating Time (min)	75

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE200709-DD1	120.0	60	0.0575	6.844	0.9920	12.80
	277.0	60	0.0289	7.355	0.9190	24.11

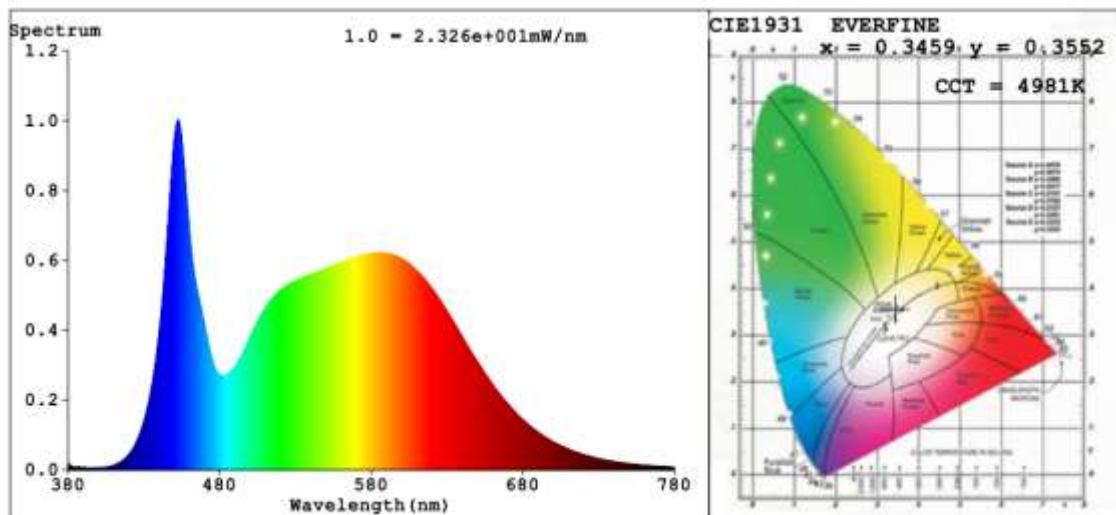
**Chromaticity Measurement - Sphere-Spectroradiometer**
**Method(Self-absorption:1.0147)(4 $\pi$  geometry):**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	84	R9	19
Frequency (Hz)	60	R2	90	R10	76
CCT (K)	4981	R3	94	R11	82
Duv	0.0015	R4	83	R12	59
Chromaticity (x, y)	x=0.3459 y=0.3552	R5	83	R13	86
Chromaticity (u', v')	u'=0.2106 v'=0.4866	R6	85	R14	97
Color Rendering Index (CRI)	84.9	R7	89	R15	79
R9	19	R8	71	--	--

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

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	918.27	932.45
Luminous Efficacy (lm/W)	134.17	126.78
Beam Angle (°)	109.3	--
Center Beam Candle Power (cd)	315	--

## Spectral Power Distribution & Chromaticity Diagram



## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	244.5	26.6%
0-40	398.6	43.4%
0-60	696.0	75.8%
60-90	206.2	22.5%
70-100	107.4	11.7%
90-120	13.7	1.5%
0-90	902.2	98.3%
90-180	16.0	1.7%
0-180	918.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	29.8	3.2%	90-100	8.1	0.9%
10-20	85.5	9.3%	100-110	3.3	0.4%
20-30	129.2	14.1%	110-120	2.3	0.2%
30-40	154.1	16.8%	120-130	1.3	0.1%
40-50	157.5	17.1%	130-140	0.6	0.1%
50-60	139.9	15.2%	140-150	0.3	0%
60-70	106.9	11.6%	150-160	0.0	0%
70-80	66.9	7.3%	160-170	0.0	0%
80-90	32.3	3.5%	170-180	0.0	0%

## Photometric Data

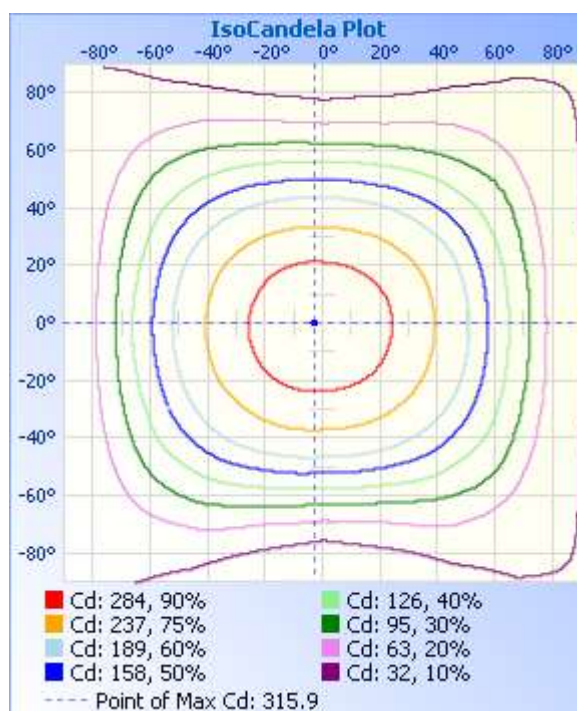
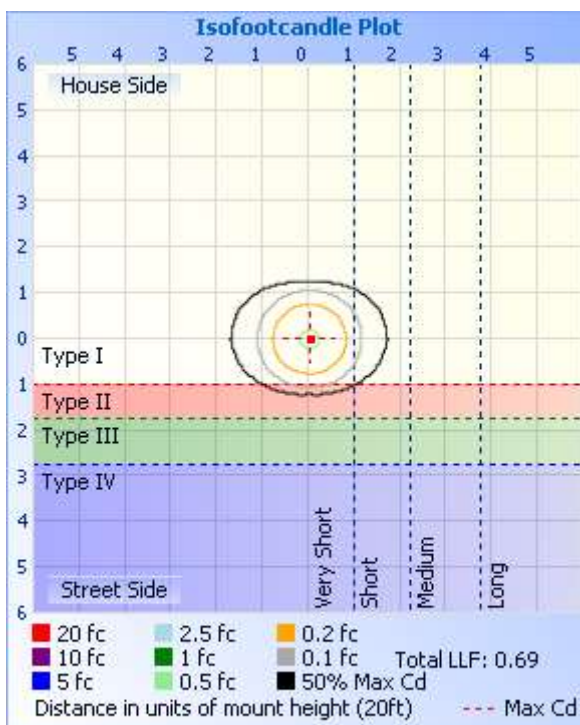
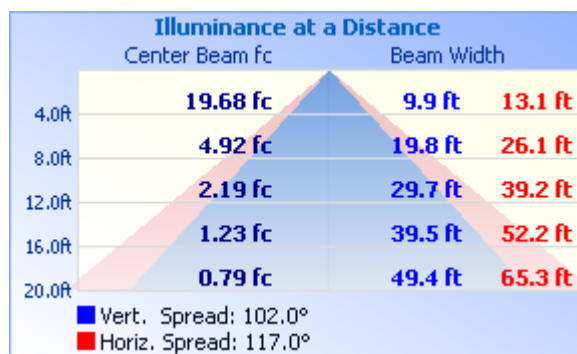
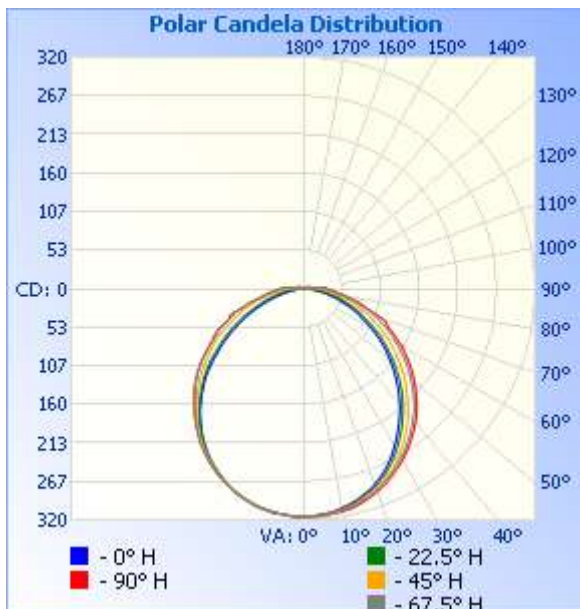




Table--1

UNIT: °C

C (DEG) D (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	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	315	
5	313	313	312	313	313	314	315	314	315	315	314	314	314	313	314	313	
10	310	308	307	308	308	309	311	311	312	312	311	311	310	309	309	309	
15	303	302	301	299	300	301	304	305	307	307	305	305	303	302	303	303	
20	293	293	290	288	288	291	294	296	299	299	296	295	293	292	293	293	
25	282	280	276	273	272	276	282	285	288	287	285	283	279	280	281	281	
30	267	266	260	254	252	258	265	270	274	273	270	267	263	264	266	267	
35	250	248	241	233	230	236	246	254	258	257	253	249	244	245	248	251	
40	232	229	219	210	207	214	225	236	241	240	234	227	221	223	228	232	
45	213	208	196	187	183	191	202	217	222	220	212	203	196	199	206	211	
50	193	188	173	162	158	166	180	194	201	199	191	177	168	173	183	192	
55	169	165	150	138	134	141	156	172	178	177	166	148	138	144	160	170	
60	146	140	127	113	107	116	132	148	157	153	141	120	108	116	135	144	
65	124	121	103	89.1	85.5	92.4	109	125	132	130	116	93.6	80.8	89.2	109	126	
70	108	96.6	85.0	68.1	62.3	71.0	87.7	106	110	110	93.1	68.8	55.1	65.1	89.7	101	
75	77.2	74.7	63.5	49.4	42.3	51.6	68.2	77.8	82.9	79.9	71.5	47.6	33.0	43.9	66.9	76.5	
80	55.8	52.4	43.6	32.7	25.0	33.7	48.1	56.8	59.6	59.4	50.3	29.7	13.8	26.8	44.9	54.7	
85	41.0	38.6	30.9	18.5	10.6	19.9	32.4	40.2	43.4	42.8	34.6	17.7	1.59	15.2	32.4	40.5	
90	30.5	28.3	21.4	9.58	1.18	10.2	22.8	30.2	32.7	32.3	24.8	9.84	0.00	8.38	22.7	30.1	
95	9.88	4.76	3.77	1.82	0.01	0.88	5.69	12.9	8.93	0.11	0.00	4.58	0.00	3.12	0.00	0.14	
100	0.05	1.95	9.86	3.14	2.93	3.15	10.4	0.27	0.07	0.05	8.23	2.50	0.00	1.57	7.04	0.07	
105	8.71	1.81	4.32	2.15	4.12	2.12	4.51	1.80	9.16	3.73	1.36	0.38	0.00	0.50	1.10	4.34	
110	6.49	1.45	2.01	1.54	3.66	1.50	2.08	1.60	7.28	6.43	0.05	0.08	0.00	0.07	0.05	6.39	
115	4.80	2.02	1.00	1.34	3.65	1.26	1.06	2.09	5.31	6.12	1.17	0.02	0.02	0.02	1.18	5.83	
120	3.60	1.81	0.80	1.57	3.05	1.09	0.87	1.81	3.86	4.40	1.67	0.18	0.02	0.15	1.63	4.26	
125	2.76	1.54	0.76	1.62	0.03	1.18	0.80	1.53	2.86	3.20	1.65	0.20	0.01	0.20	1.58	3.17	
130	2.14	1.31	0.56	1.12	0.02	1.23	0.52	1.28	2.21	2.42	1.46	0.08	0.01	0.15	1.43	2.37	
135	1.69	1.11	0.51	0.03	0.02	0.03	0.44	1.05	1.70	1.79	1.02	0.01	0.00	0.01	1.05	1.81	
140	1.32	0.91	0.41	0.03	0.02	0.02	0.32	0.82	1.28	1.29	0.66	0.01	0.01	0.01	0.70	1.37	
145	0.98	0.69	0.29	0.08	0.02	0.06	0.14	0.58	0.90	0.87	0.34	0.01	0.01	0.01	0.37	0.93	
150	0.65	0.46	0.03	0.08	0.02	0.07	0.03	0.30	0.53	0.49	0.03	0.01	0.01	0.01	0.01	0.53	
155	0.34	0.20	0.01	0.03	0.02	0.03	0.01	0.02	0.10	0.06	0.01	0.01	0.00	0.00	0.01	0.01	
160	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	
165	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	
170	0.01	0.01	0.01	0.03	0.01	0.05	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.01	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 \*\*\*\*\***