

## **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-7311-40K-G3

Representative (Tested) Model: LED-7311-40K-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-7311-40K-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	4000K	
LED Manufacturer	EVERLIGHT ELECTRONICS CO., LTD	
LED Model	67-21S/KK7C-H407034Z15/DT(GC)	
Sample Number	JBE200709-CC1	
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.11,2020
Date of Test	Aug.17,2020
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	2020-08-17	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-7311-40K-G3	Total Operating Time (min)	75

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE200709-CC1	120.0	60	0.0601	7.152	0.9920	12.11
	277.0	60	0.0295	7.466	0.9140	24.23

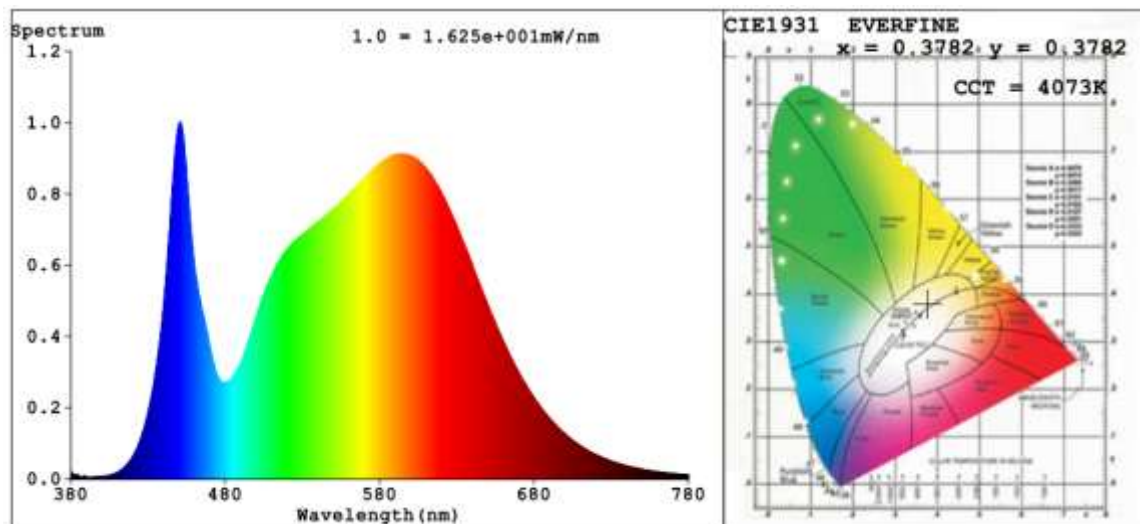
**Chromaticity Measurement - Sphere-Spectroradiometer**
**Method(Self-absorption:1.0144)(4 $\pi$  geometry):**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	82	R9	14
Frequency (Hz)	60	R2	89	R10	74
CCT (K)	4073	R3	94	R11	83
Duv	0.0013	R4	84	R12	63
Chromaticity (x, y)	x=0.3782 y=0.3782	R5	82	R13	84
Chromaticity (u', v')	u'=0.2230 v'=0.5019	R6	85	R14	97
Color Rendering Index (CRI)	83.9	R7	88	R15	76
R9	14	R8	67	--	--

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

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	908.95	922.63
Luminous Efficacy (lm/W)	127.09	123.58
Beam Angle (°)	107.9	--
Center Beam Candle Power (cd)	318	--

### Spectral Power Distribution & Chromaticity Diagram



### Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	244.9	26.9%
0-40	397.8	43.8%
0-60	690.8	76%
60-90	202.6	22.3%
70-100	105.1	11.6%
90-120	13.1	1.4%
0-90	893.4	98.3%
90-180	15.4	1.7%
0-180	908.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	30.1	3.3%	90-100	7.5	0.8%
10-20	85.9	9.4%	100-110	3.4	0.4%
20-30	129.0	14.2%	110-120	2.3	0.3%
30-40	152.8	16.8%	120-130	1.3	0.1%
40-50	155.4	17.1%	130-140	0.6	0.1%
50-60	137.6	15.1%	140-150	0.2	0%
60-70	105.0	11.6%	150-160	0.0	0%
70-80	65.7	7.2%	160-170	0.0	0%
80-90	32.0	3.5%	170-180	0.0	0%

## Photometric Data

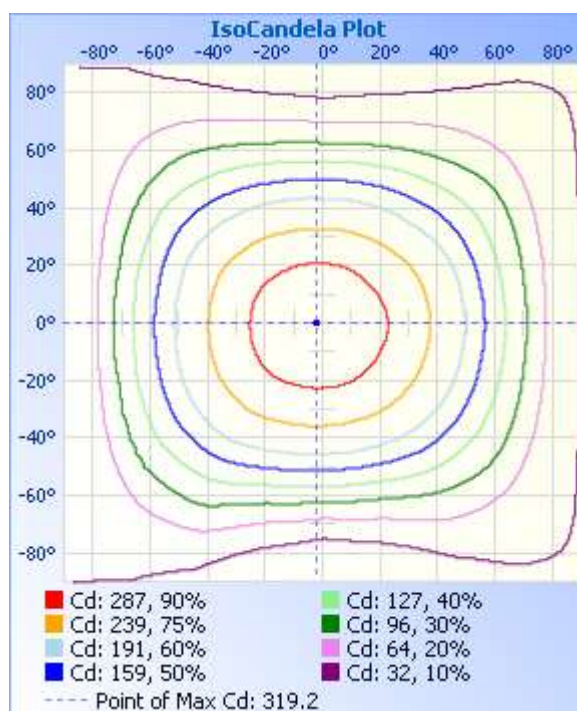
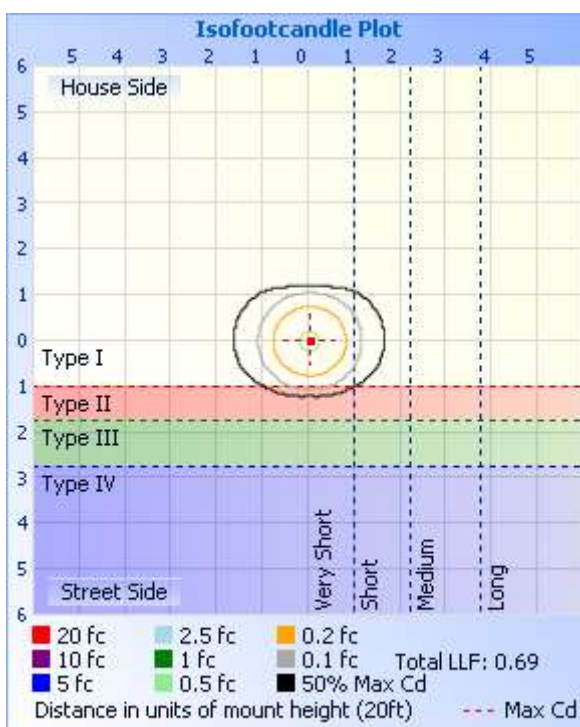
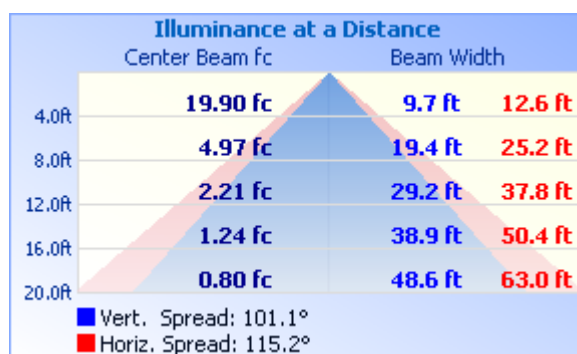
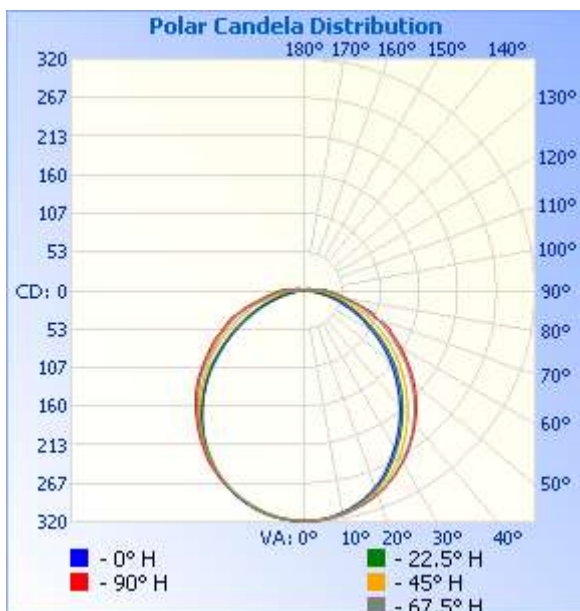




Table--1 UNIT: cd

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	318	318	318	318	318	318	318	318	318	318	318	318	318	318	318	318	
5	316	316	316	316	317	318	317	317	318	318	318	317	317	317	316	316	
10	311	310	310	311	312	313	313	314	314	314	314	313	312	312	311	310	
15	303	302	301	302	303	304	306	308	308	308	308	305	304	304	302	302	
20	293	291	289	290	290	292	296	299	300	300	299	294	293	292	292	291	
25	280	278	274	273	272	276	283	287	289	288	287	281	279	278	278	279	
30	266	263	256	252	252	256	266	273	274	274	272	263	261	260	262	264	
35	248	244	236	231	231	235	246	256	258	258	255	244	241	240	243	245	
40	229	224	214	209	208	214	224	237	240	239	235	223	217	217	222	225	
45	210	204	191	186	184	191	202	217	220	220	213	199	191	193	199	205	
50	189	183	168	163	160	167	179	195	200	198	191	173	164	167	176	184	
55	165	159	146	138	135	142	156	172	177	176	167	145	134	138	152	160	
60	144	136	122	114	109	117	133	149	155	153	143	117	105	110	127	137	
65	120	114	99.2	90.0	86.8	93.3	109	127	133	130	118	91.0	77.4	83.5	102	115	
70	100	95.1	80.2	70.0	64.5	72.4	89.4	104	104	103	97.4	67.0	52.3	60.3	80.8	95.0	
75	75.6	70.0	60.7	51.0	44.7	54.0	67.4	82.8	81.0	80.6	72.3	47.0	30.6	39.2	60.0	69.3	
80	54.3	51.1	42.1	34.1	27.1	35.9	49.6	57.1	59.1	57.4	50.2	29.1	12.8	23.1	40.9	50.4	
85	40.6	38.1	29.8	20.2	12.5	21.3	33.7	43.2	43.3	43.0	36.0	16.5	0.88	12.3	28.6	37.4	
90	30.1	27.8	20.9	10.9	2.82	11.0	23.3	30.9	32.0	31.2	24.8	7.89	0.00	6.31	15.4	27.2	
95	8.03	3.16	0.10	0.09	0.00	0.00	9.33	15.4	1.77	0.00	0.00	4.69	0.00	3.10	0.00	0.01	
100	0.05	1.37	9.25	3.69	3.62	3.27	10.6	0.07	0.09	0.13	6.44	1.87	0.00	1.30	3.83	0.09	
105	9.32	1.14	3.80	2.38	4.62	2.11	4.58	2.62	9.50	6.51	0.30	0.21	0.00	0.10	0.14	5.05	
110	6.80	2.03	1.66	1.60	3.88	1.46	1.95	1.06	7.05	7.89	0.09	0.02	0.01	0.02	0.13	6.28	
115	5.03	2.24	0.77	1.31	4.13	1.27	0.94	1.97	5.03	6.20	1.37	0.06	0.02	0.04	1.23	5.45	
120	3.76	1.94	0.77	1.43	3.38	1.13	0.69	1.69	3.50	4.11	1.61	0.22	0.00	0.06	1.58	4.08	
125	2.89	1.66	0.73	1.67	0.04	1.24	0.73	1.38	2.54	2.86	1.61	0.24	0.01	0.17	1.59	3.02	
130	2.26	1.40	0.61	1.22	0.42	1.38	0.49	1.16	1.93	2.14	1.44	0.14	0.01	0.05	1.35	2.28	
135	1.76	1.16	0.52	0.07	0.04	0.02	0.44	1.00	1.55	1.68	1.08	0.01	0.01	0.01	0.95	1.71	
140	1.34	0.92	0.40	0.02	0.03	0.04	0.34	0.83	1.24	1.28	0.74	0.01	0.01	0.01	0.53	1.22	
145	0.75	0.67	0.27	0.06	0.02	0.05	0.23	0.62	0.91	0.90	0.47	0.01	0.01	0.01	0.19	0.76	
150	0.56	0.42	0.07	0.07	0.02	0.09	0.05	0.41	0.58	0.56	0.21	0.00	0.01	0.00	0.01	0.36	
155	0.23	0.13	0.01	0.04	0.02	0.03	0.01	0.15	0.26	0.23	0.01	0.01	0.00	0.00	0.01	0.01	
160	0.01	0.01	0.01	0.03	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
165	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	
170	0.01	0.01	0.01	0.06	0.00	0.06	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	
175	0.01	0.01	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-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 \*\*\*\*\***