

## **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-7312-40K-G3

Representative (Tested) Model: LED-7312-40K-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-7312-40K-G3	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Lamp	
Base Type	GX23-2	
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-G1	
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.12,2020
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	2020-08-12	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-7312-40K-G3	Total Operating Time (min)	75

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE200709-G1	120.0	60	0.0574	6.840	0.9920	12.90
	277.0	60	0.0265	6.724	0.9150	24.41

### Chromaticity Measurement - Sphere-Spectroradiometer

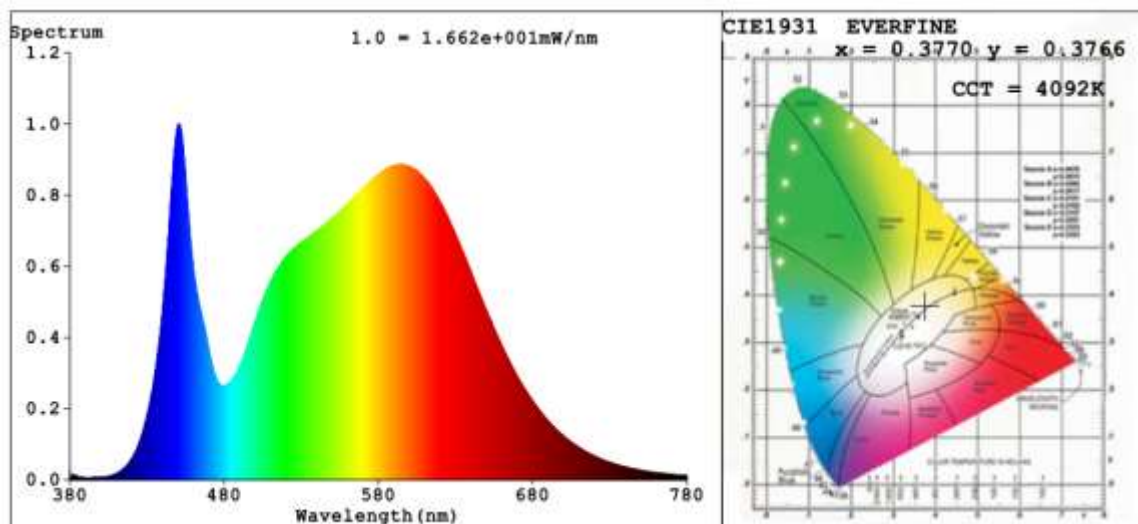
Method(Self-absorption:1.0145)(4 $\pi$  geometry):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	83	R9	15
Frequency (Hz)	60	R2	89	R10	74
CCT (K)	4092	R3	94	R11	83
Duv	0.0009	R4	84	R12	63
Chromaticity (x, y)	x=0.3770 y=0.3766	R5	83	R13	84
Chromaticity (u', v')	u'=0.2229 v'=0.5010	R6	85	R14	97
Color Rendering Index (CRI)	84.1	R7	88	R15	77
R9	15	R8	68	--	--

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

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	872.83	883.31
Luminous Efficacy (lm/W)	127.61	131.37
Beam Angle (°)	107.9	--
Center Beam Candle Power (cd)	304	--

## Spectral Power Distribution & Chromaticity Diagram



## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	234.9	26.9%
0-40	381.7	43.7%
0-60	662.4	75.9%
60-90	194.7	22.3%
70-100	102.3	11.7%
90-120	13.2	1.5%
0-90	857.1	98.2%
90-180	15.6	1.8%
0-180	872.7	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	28.8	3.3%	90-100	7.7	0.9%
10-20	82.3	9.4%	100-110	3.2	0.4%
20-30	123.8	14.2%	110-120	2.2	0.3%
30-40	146.8	16.8%	120-130	1.4	0.2%
40-50	149.1	17.1%	130-140	0.7	0.1%
50-60	131.6	15.1%	140-150	0.3	0%
60-70	100.1	11.5%	150-160	0.1	0%
70-80	63.4	7.3%	160-170	0.0	0%
80-90	31.2	3.6%	170-180	0.0	0%

## Photometric Data

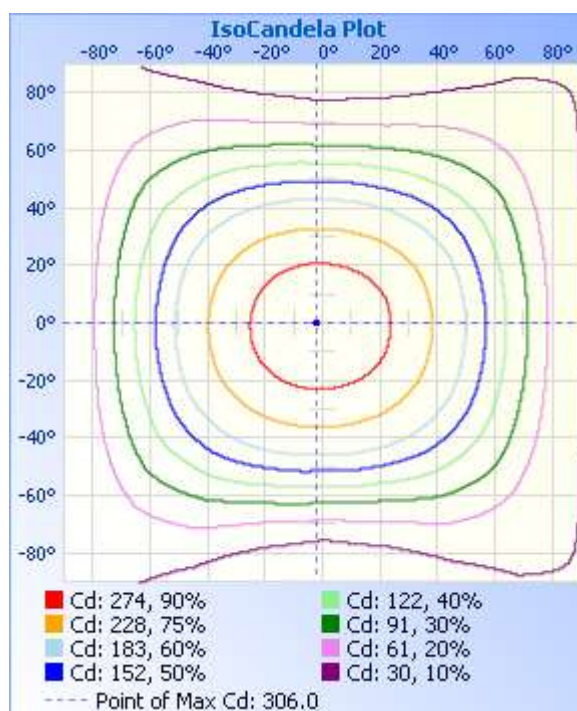
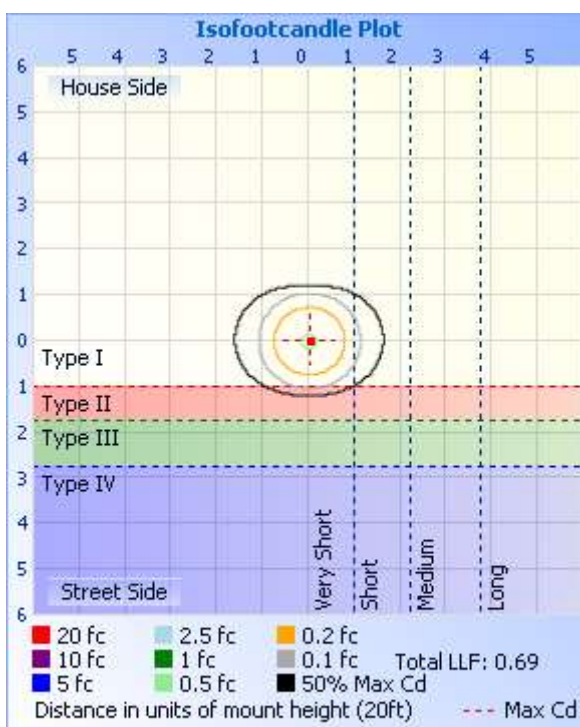
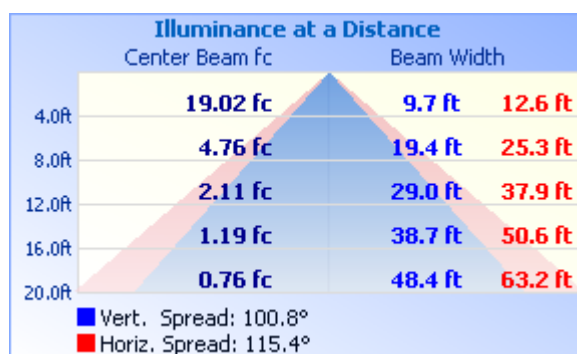
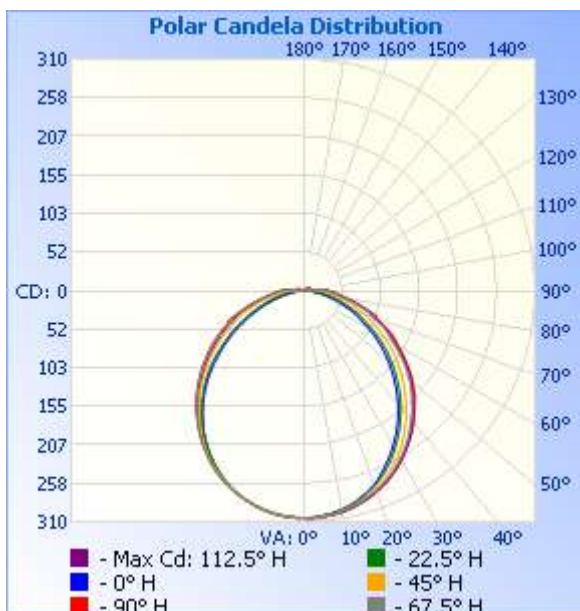




Table--1

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	304	304	304	304	304	304	304	304	304	304	304	304	304	304	304	304	
5	303	303	303	302	303	302	303	304	304	305	304	304	303	303	303	303	
10	298	299	298	297	298	298	299	300	300	302	300	300	299	298	298	298	
15	291	291	290	289	289	290	292	294	295	295	294	292	291	291	291	291	
20	282	282	280	277	277	279	282	285	286	287	285	282	280	281	282	282	
25	270	270	266	261	260	264	270	273	276	276	273	269	267	267	269	271	
30	256	254	249	241	240	245	254	259	263	262	259	254	250	251	254	256	
35	239	237	229	221	220	225	235	243	247	246	241	235	231	232	236	239	
40	221	218	208	200	197	203	214	225	230	228	222	214	209	211	217	220	
45	202	198	186	177	173	181	193	206	211	209	201	191	185	188	195	201	
50	181	176	163	154	150	157	170	186	191	189	179	166	158	163	173	180	
55	159	154	141	130	125	134	148	163	169	166	155	138	129	135	149	158	
60	139	132	118	105	101	110	126	139	147	143	131	112	102	109	126	136	
65	116	111	96.1	83.3	79.4	87.0	103	120	126	123	107	86.2	76.3	83.5	102	115	
70	96.8	92.8	77.5	63.1	58.0	67.6	84.6	96.5	105	98.9	86.7	63.3	52.0	60.9	81.4	96.3	
75	74.9	69.5	59.5	45.5	39.6	48.8	65.7	77.7	81.3	78.7	66.0	43.0	31.1	41.0	62.2	71.9	
80	52.8	50.4	41.7	29.1	23.1	33.1	47.8	57.1	59.8	58.1	47.1	27.1	13.7	25.1	42.8	52.0	
85	39.7	37.1	28.3	16.4	9.86	19.5	33.3	42.1	44.8	42.9	32.8	14.8	1.41	14.1	29.9	38.4	
90	29.6	27.2	19.7	8.07	0.94	10.2	23.3	31.3	33.9	31.9	23.0	7.97	0.00	7.70	20.8	28.4	
95	8.13	3.02	0.08	1.91	0.00	1.68	5.69	12.6	7.55	0.09	0.00	3.75	0.00	3.45	0.00	0.01	
100	0.05	2.82	8.73	2.65	2.50	3.26	10.7	0.29	0.09	0.07	6.77	1.99	0.00	2.02	5.45	0.08	
105	8.56	1.69	3.81	1.94	3.72	2.15	4.40	1.50	10.7	4.43	0.58	0.37	0.00	0.35	0.38	5.23	
110	6.27	1.23	1.74	1.49	3.33	1.52	1.88	1.86	7.83	6.91	0.05	0.01	0.00	0.02	0.06	6.70	
115	4.57	1.83	0.85	1.30	3.55	1.23	0.84	2.34	5.60	6.29	1.11	0.02	0.01	0.02	1.22	5.66	
120	3.43	1.66	0.66	1.51	2.90	1.03	0.69	2.03	4.11	4.65	1.67	0.20	0.00	0.17	1.63	4.17	
125	2.66	1.45	0.65	1.70	0.05	1.11	0.74	1.73	3.14	3.45	1.82	0.32	0.01	0.18	1.63	3.09	
130	2.09	1.23	0.48	1.04	0.03	1.10	0.65	1.50	2.48	2.67	1.73	0.32	0.01	0.05	1.40	2.33	
135	1.60	1.00	0.41	0.02	0.02	0.02	0.62	1.30	2.00	2.13	1.39	0.01	0.00	0.01	0.56	1.71	
140	1.19	0.78	0.29	0.03	0.02	0.01	0.53	1.10	1.63	1.68	1.06	0.01	0.01	0.00	0.43	1.21	
145	0.82	0.53	0.14	0.05	0.02	0.09	0.42	0.88	1.26	1.27	0.79	0.01	0.01	0.00	0.13	0.74	
150	0.46	0.28	0.02	0.06	0.02	0.05	0.27	0.65	0.92	0.92	0.55	0.00	0.00	0.00	0.00	0.31	
155	0.07	0.02	0.01	0.02	0.01	0.02	0.01	0.40	0.59	0.58	0.01	0.01	0.00	0.00	0.00	0.01	
160	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.07	0.01	0.00	0.00	0.00	0.00	
165	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
170	0.01	0.01	0.00	0.05	0.00	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
175	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	
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 \*\*\*\*\***