

## **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-7312-35K-G3

Representative (Tested) Model: LED-7312-35K-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-7312-35K-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	3500K	
LED Manufacturer	EVERLIGHT ELECTRONICS CO., LTD	
LED Model	67-21S/KK7C-H356534Z15/DT(GC)	
Sample Number	JBE200709-F1	
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.20,2020
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	2020-08-20	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-7312-35K-G3	Total Operating Time (min)	75

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE200709-F1	120.0	60	0.0603	7.175	0.9920	12.70
	277.0	60	0.0288	7.341	0.9210	24.10

### Chromaticity Measurement - Sphere-Spectroradiometer

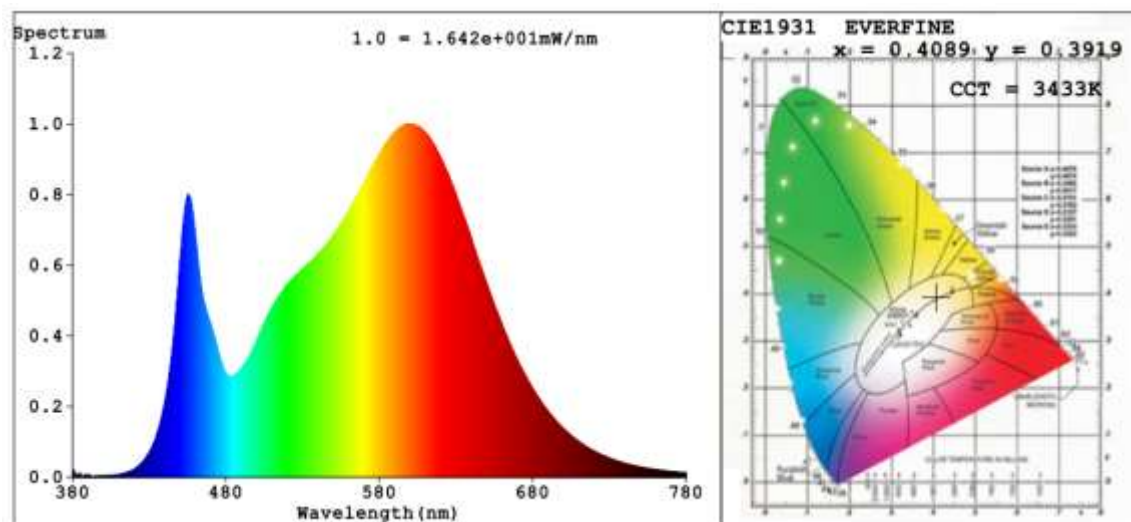
Method(Self-absorption:1.01241)(4 $\pi$  geometry):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	83	R9	12
Frequency (Hz)	60	R2	93	R10	83
CCT (K)	3433	R3	96	R11	80
Duv	-0.0002	R4	81	R12	68
Chromaticity (x, y)	x=0.4089 y=0.3919	R5	83	R13	86
Chromaticity (u', v')	u'=0.2375 v'=0.5123	R6	90	R14	98
Color Rendering Index (CRI)	83.9	R7	84	R15	76
R9	12	R8	62	--	--

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

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	870.95	880.19
Luminous Efficacy (lm/W)	121.39	119.90
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	234.5	26.9%
0-40	380.8	43.7%
0-60	660.7	75.9%
60-90	195.2	22.4%
70-100	102.3	11.7%
90-120	12.9	1.5%
0-90	855.9	98.3%
90-180	15.0	1.7%
0-180	870.9	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	28.8	3.3%	90-100	7.5	0.9%
10-20	82.2	9.4%	100-110	3.3	0.4%
20-30	123.5	14.2%	110-120	2.1	0.2%
30-40	146.3	16.8%	120-130	1.2	0.1%
40-50	148.7	17.1%	130-140	0.6	0.1%
50-60	131.3	15.1%	140-150	0.2	0%
60-70	100.4	11.5%	150-160	0.0	0%
70-80	63.4	7.3%	160-170	0.0	0%
80-90	31.4	3.6%	170-180	0.0	0%

## Photometric Data

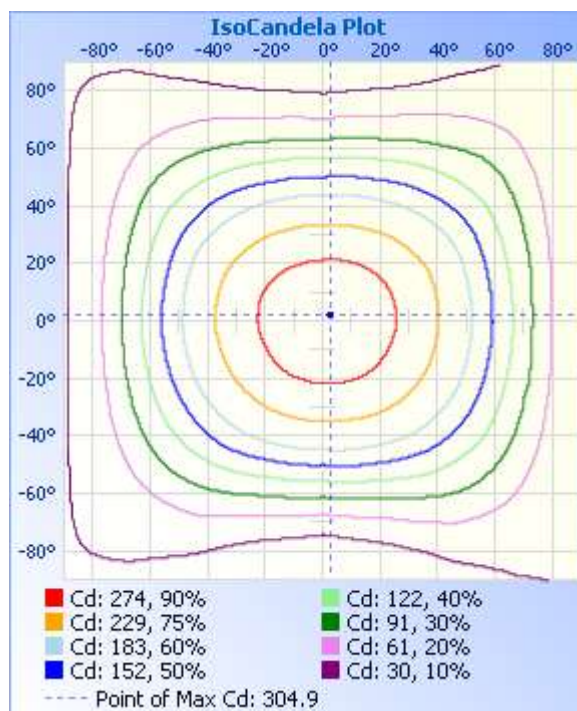
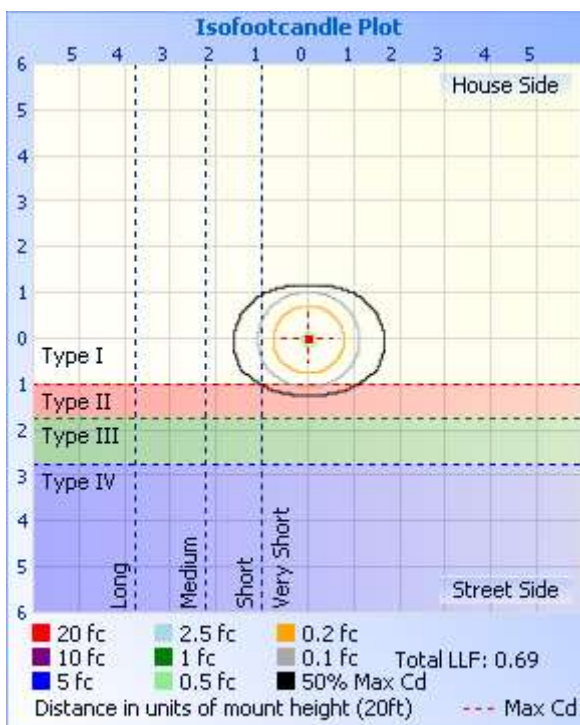
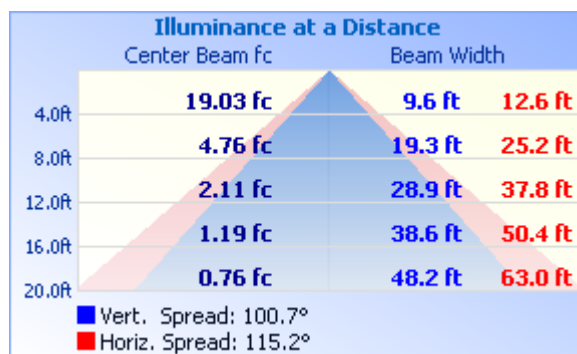
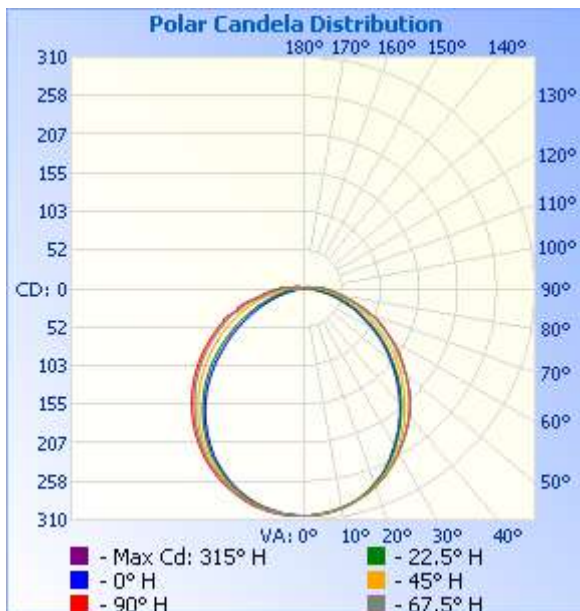




Table--1

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	304	304	304	304	303	302	303	302	302	301	302	302	302	303	304	304	
10	301	301	301	300	298	298	298	298	298	297	297	297	297	298	299	300	
15	295	295	294	292	291	290	291	291	291	289	289	289	289	290	292	293	
20	286	287	285	281	278	279	281	283	281	279	279	278	278	280	283	284	
25	275	276	272	267	263	264	268	270	269	266	265	263	263	266	270	273	
30	262	263	257	249	244	246	252	255	254	250	249	246	246	250	255	259	
35	246	247	238	228	223	225	232	238	238	234	231	227	226	231	237	242	
40	229	229	218	207	202	204	211	221	221	215	210	205	204	209	218	225	
45	210	210	196	184	178	182	190	201	201	195	190	182	179	186	197	205	
50	190	189	175	161	155	158	169	179	180	173	167	156	151	160	175	185	
55	170	167	152	139	132	135	146	156	158	151	143	128	123	133	151	163	
60	147	146	130	116	107	112	123	135	137	130	118	102	96.0	107	128	141	
65	126	124	108	92.6	84.8	90.0	102	113	117	109	96.9	78.3	70.4	82.0	105	120	
70	107	104	87.4	72.8	64.9	70.5	82.6	93.8	92.6	85.6	76.7	55.5	46.9	59.5	84.4	101	
75	85.9	82.2	70.5	53.8	45.9	51.6	63.3	70.4	70.6	63.8	55.0	37.2	26.7	40.0	62.9	78.6	
80	58.5	60.7	51.3	36.9	28.9	35.2	44.9	52.0	51.7	46.9	38.6	21.9	9.47	24.3	43.4	53.5	
85	44.9	43.9	34.6	21.9	14.2	21.4	32.0	39.0	39.2	35.4	27.3	11.9	0.14	13.4	31.0	40.6	
90	32.1	32.0	24.1	11.6	3.42	11.7	22.6	28.8	29.1	25.9	18.7	6.13	0.00	6.61	21.1	29.1	
95	0.02	7.31	3.88	0.00	0.00	0.00	10.3	16.9	3.48	0.00	0.00	2.99	0.00	3.72	0.00	0.01	
100	0.04	0.15	11.0	3.43	2.04	3.66	10.3	0.07	0.08	0.17	4.95	1.45	0.00	1.72	5.27	0.12	
105	9.72	2.22	4.78	2.22	3.72	2.39	4.69	2.13	8.77	3.78	0.70	0.33	0.00	0.34	0.61	5.15	
110	7.09	1.29	1.97	1.44	3.18	1.49	2.05	1.21	6.41	5.27	0.04	0.04	0.00	0.02	0.06	6.38	
115	5.10	2.14	0.88	1.25	3.71	1.25	0.96	1.95	4.71	4.79	0.84	0.02	0.01	0.02	1.00	5.32	
120	3.59	1.83	0.68	1.37	3.28	1.09	0.67	1.76	3.47	3.57	1.22	0.10	0.00	0.15	1.34	3.74	
125	2.65	1.51	0.72	1.72	0.02	1.25	0.70	1.48	2.62	2.67	1.25	0.08	0.01	0.22	1.42	2.77	
130	2.03	1.28	0.55	1.47	0.02	1.40	0.48	1.23	2.00	2.02	1.08	0.02	0.00	0.18	1.33	2.16	
135	1.64	1.11	0.52	0.02	0.01	0.02	0.41	1.01	1.54	1.49	0.74	0.00	0.01	0.00	1.05	1.71	
140	1.33	0.95	0.44	0.02	0.02	0.02	0.29	0.78	1.14	1.03	0.43	0.00	0.00	0.00	0.70	1.31	
145	1.01	0.75	0.33	0.06	0.01	0.05	0.12	0.54	0.77	0.65	0.12	0.00	0.00	0.00	0.31	0.91	
150	0.70	0.54	0.21	0.08	0.02	0.09	0.03	0.27	0.41	0.26	0.01	0.00	0.00	0.00	0.00	0.53	
155	0.40	0.32	0.01	0.03	0.01	0.03	0.01	0.02	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.01	
160	0.01	0.01	0.01	0.03	0.01	0.04	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	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	0.00	0.00	0.00	
170	0.01	0.02	0.01	0.06	0.00	0.07	0.01	0.03	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	0.01	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 \*\*\*\*\***