

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-7312-50K-G3

Representative (Tested) Model: LED-7312-50K-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-7312-50K-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	5000K	
LED Manufacturer	EVERLIGHT ELECTRONICS CO., LTD	
LED Model	67-21S/KK7C-H507034Z15/DT(GC)	
Sample Number	JBE200709-H1	
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.20,2020
Date of Test	Aug.24,2020
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	2020-08-24	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-7312-50K-G3	Total Operating Time (min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE200709-	120.0	60	0.0581	6.911	0.9910	12.90
H1	277.0	60	0.0274	6.972	0.9200	24.81

Chromaticity Measurement - Sphere-Spectroradiometer

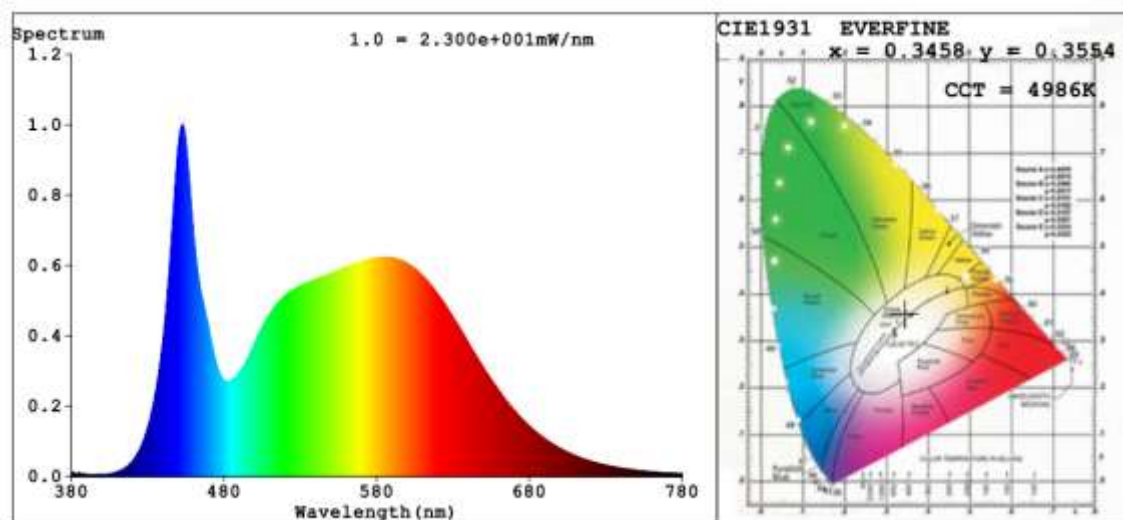
Method(Self-absorption:1.0149)(4 π geometry):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	83	R9	18
Frequency (Hz)	60	R2	90	R10	76
CCT (K)	4986	R3	94	R11	82
Duv	0.0016	R4	83	R12	59
Chromaticity (x, y)	x=0.3458 y=0.3554	R5	83	R13	85
Chromaticity (u', v')	u'=0.2104 v'=0.4866	R6	85	R14	97
Color Rendering Index (CRI)	84.8	R7	89	R15	78
R9	18	R8	70	--	--

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

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	913.99	917.90
Luminous Efficacy (lm/W)	132.25	131.65
Beam Angle (°)	109.3	--
Center Beam Candle Power (cd)	313	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	242.5	26.5%
0-40	395.1	43.2%
0-60	689.4	75.4%
60-90	207.2	22.7%
70-100	109.8	12%
90-120	14.8	1.6%
0-90	896.5	98.1%
90-180	17.3	1.9%
0-180	913.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	29.6	3.2%	90-100	8.9	1%
10-20	84.8	9.3%	100-110	3.5	0.4%
20-30	128.1	14.0%	110-120	2.4	0.3%
30-40	152.6	16.7%	120-130	1.4	0.2%
40-50	155.8	17.0%	130-140	0.7	0.1%
50-60	138.5	15.2%	140-150	0.3	0%
60-70	106.3	11.6%	150-160	0.1	0%
70-80	67.4	7.4%	160-170	0.0	0%
80-90	33.4	3.7%	170-180	0.0	0%

Photometric Data

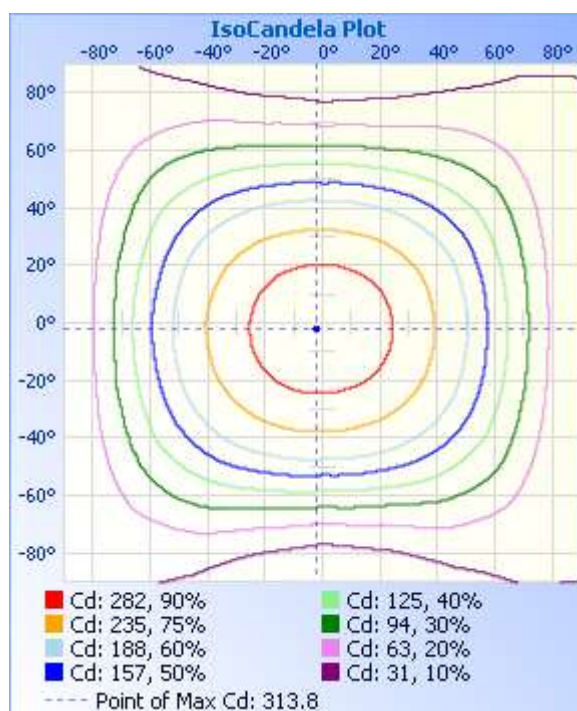
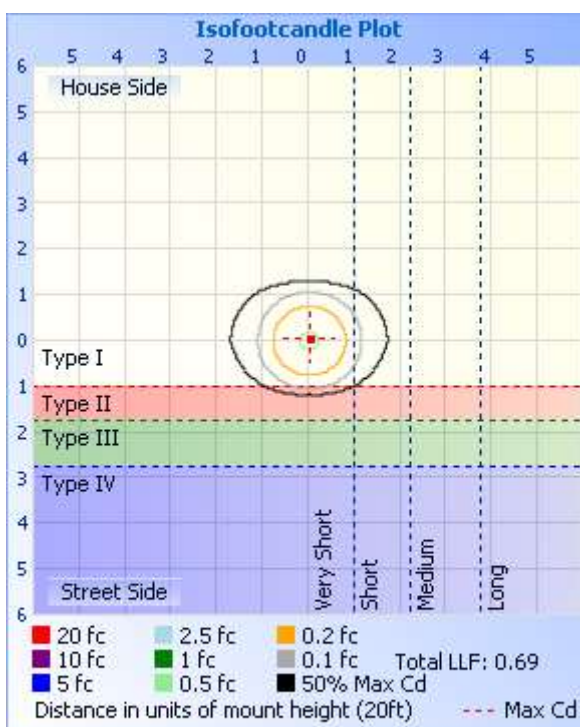
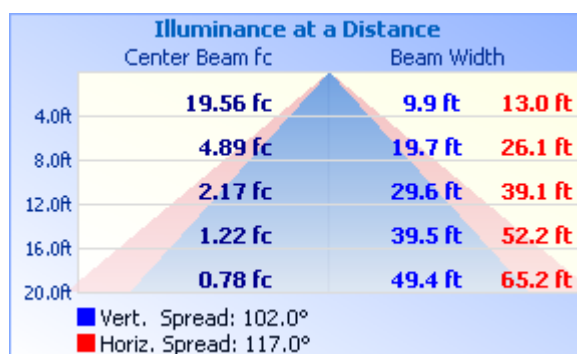
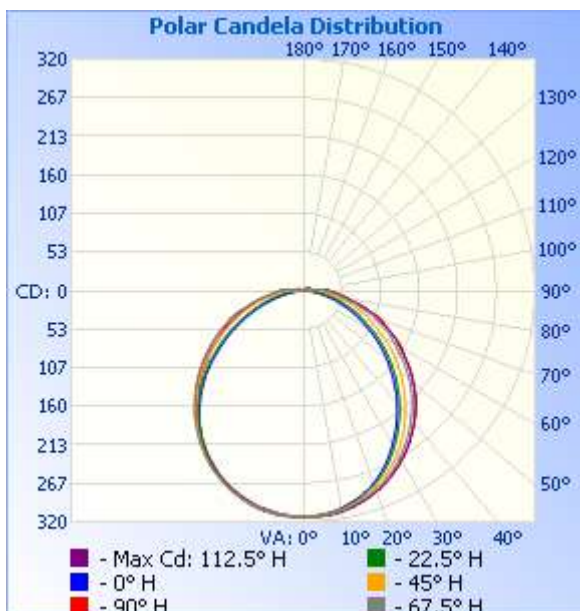


Table--1 UNIT: °C

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	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313	313		
5	311	311	311	311	311	311	312	312	313	313	313	313	313	312	312	311		
10	307	306	305	305	306	306	308	308	309	310	310	310	309	308	308	308		
15	300	300	297	296	296	298	300	301	304	304	304	304	303	302	301	301		
20	292	290	287	284	284	286	289	292	295	296	295	295	293	292	292	294		
25	279	277	273	268	267	270	276	281	284	285	284	282	280	279	281	281		
30	265	262	256	249	246	251	260	267	271	271	270	266	264	264	267	267		
35	248	245	236	228	225	229	241	250	256	256	253	249	245	245	249	250		
40	230	225	214	205	202	207	219	231	239	238	233	228	223	225	229	232		
45	210	205	192	181	177	184	197	213	220	219	213	204	199	202	207	212		
50	189	183	168	157	152	160	175	191	199	199	190	179	172	176	184	190		
55	167	160	145	133	128	135	152	168	177	176	168	151	142	148	161	168		
60	144	136	122	108	102	111	128	146	156	153	143	124	114	120	136	145		
65	122	115	98.9	84.2	80.0	88.2	105	124	132	132	118	97.0	86.0	92.8	111	123		
70	103	95.6	79.2	63.8	58.5	68.1	86.0	105	115	111	97.0	72.9	60.2	68.6	89.8	102		
75	76.6	70.7	60.3	45.7	39.3	48.9	66.6	78.3	85.8	85.6	75.0	50.7	37.2	47.1	68.2	76.4		
80	56.3	52.6	42.5	28.7	22.6	32.1	46.3	58.0	63.1	62.4	53.1	32.9	17.9	29.5	48.7	57.7		
85	41.8	38.2	29.1	16.4	8.69	19.0	33.5	43.1	47.2	47.0	38.4	19.7	3.49	16.7	33.7	41.9		
90	31.3	28.3	20.4	8.29	0.90	9.80	23.5	32.0	35.6	35.1	27.2	10.9	0.00	9.29	23.7	31.4		
95	12.9	10.3	4.49	1.03	0.02	0.49	6.13	16.0	9.81	9.79	0.00	4.31	0.00	2.57	0.00	0.20		
100	0.05	0.80	9.16	2.91	3.78	3.30	11.0	0.25	0.07	0.05	10.8	2.85	0.00	2.33	8.49	0.07		
105	8.65	2.29	4.41	2.21	4.03	2.34	5.14	2.48	9.94	3.41	1.89	0.56	0.00	0.45	1.35	3.92		
110	6.39	1.43	2.19	1.66	4.03	1.71	2.48	1.70	8.16	6.87	0.05	0.13	0.00	0.10	0.04	6.26		
115	4.72	1.84	1.21	1.53	3.90	1.43	1.28	2.21	5.91	6.65	1.07	0.02	0.02	0.02	1.04	5.76		
120	3.49	1.66	0.91	1.77	3.19	1.22	0.96	1.98	4.35	5.07	1.73	0.17	0.02	0.11	1.58	4.32		
125	2.69	1.45	0.91	1.74	0.03	1.30	1.02	1.69	3.28	3.69	1.81	0.27	0.01	0.16	1.55	3.19		
130	2.11	1.23	0.52	1.34	0.02	1.51	0.65	1.45	2.54	2.81	1.71	0.23	0.01	0.06	1.34	2.36		
135	1.62	1.01	0.42	0.03	0.02	0.03	0.55	1.23	2.01	2.17	1.35	0.01	0.00	0.01	0.95	1.74		
140	1.21	0.79	0.31	0.03	0.02	0.02	0.45	1.02	1.58	1.65	0.98	0.01	0.01	0.01	0.56	1.25		
145	0.84	0.55	0.15	0.04	0.02	0.04	0.32	0.79	1.19	1.20	0.67	0.01	0.01	0.01	0.14	0.77		
150	0.49	0.30	0.02	0.09	0.02	0.09	0.16	0.53	0.81	0.79	0.41	0.01	0.01	0.00	0.01	0.32		
155	0.08	0.02	0.01	0.03	0.02	0.03	0.01	0.28	0.46	0.44	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	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00		
170	0.01	0.01	0.01	0.04	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00		
175	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	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 *******