

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-7312-27K-G3

Representative (Tested) Model: LED-7312-27K-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-7312-27K-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	2700K	
LED Manufacturer	EVERLIGHT ELECTRONICS CO., LTD	
LED Model	67-21S/KK7C-H276034Z15/DT(GC)	
Sample Number	JBE200709-E1	
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"> 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	2020-08-20	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-7312-27K-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	0.0607	7.224	0.9910	12.80
E1	277.0	60	0.0282	7.197	0.9220	24.21

Chromaticity Measurement - Sphere-Spectroradiometer

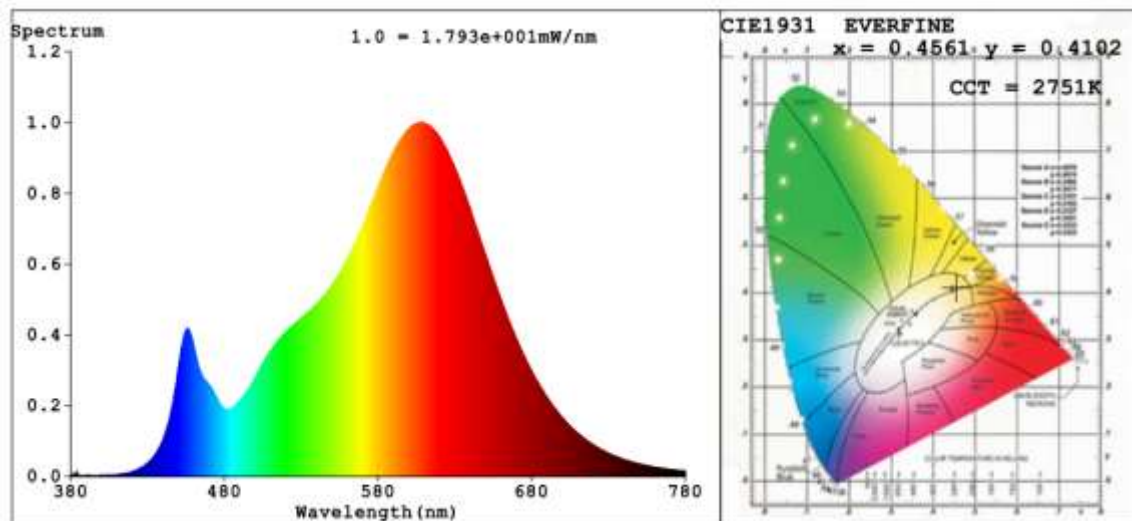
Method(Self-absorption:1.0137)(4 π geometry):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	83	R9	13
Frequency (Hz)	60	R2	94	R10	86
CCT (K)	2751	R3	94	R11	82
Duv	0.0002	R4	81	R12	76
Chromaticity (x, y)	x=0.4561 y=0.4102	R5	83	R13	86
Chromaticity (u', v')	u'=0.2602 v'=0.5266	R6	93	R14	98
Color Rendering Index (CRI)	83.9	R7	82	R15	75
R9	13	R8	60	--	--

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

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	818.09	823.41
Luminous Efficacy (lm/W)	113.25	114.41
Beam Angle (°)	107.5	--
Center Beam Candle Power (cd)	286	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	219.5	26.8%
0-40	356.0	43.5%
0-60	616.9	75.4%
60-90	185.5	22.7%
70-100	99.5	12.2%
90-120	13.3	1.6%
0-90	802.4	98.1%
90-180	15.5	1.9%
0-180	817.9	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	27.0	3.3%	90-100	8.0	1%
10-20	77.0	9.4%	100-110	3.2	0.4%
20-30	115.4	14.1%	110-120	2.1	0.3%
30-40	136.5	16.7%	120-130	1.3	0.2%
40-50	138.4	16.9%	130-140	0.6	0.1%
50-60	122.4	15.0%	140-150	0.3	0%
60-70	94.0	11.5%	150-160	0.0	0%
70-80	60.4	7.4%	160-170	0.0	0%
80-90	31.1	3.8%	170-180	0.0	0%

Photometric Data

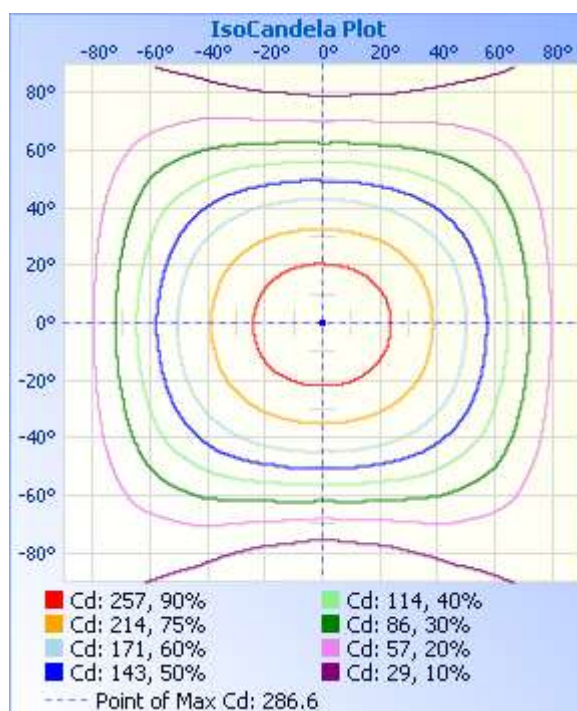
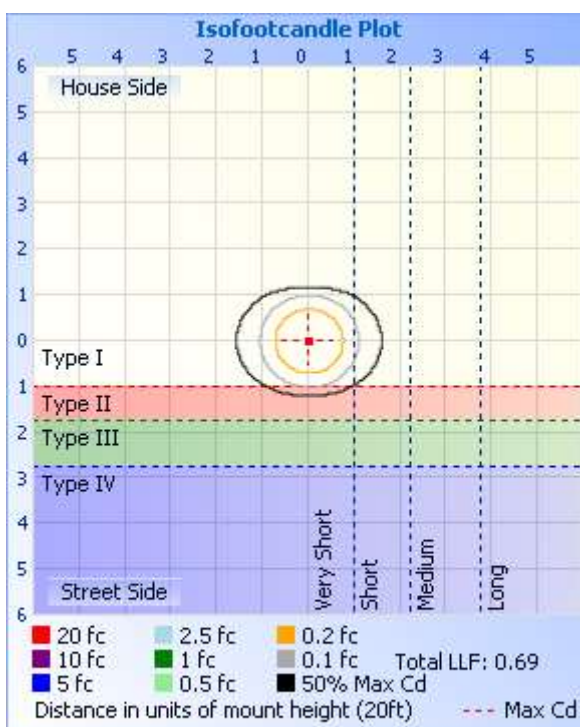
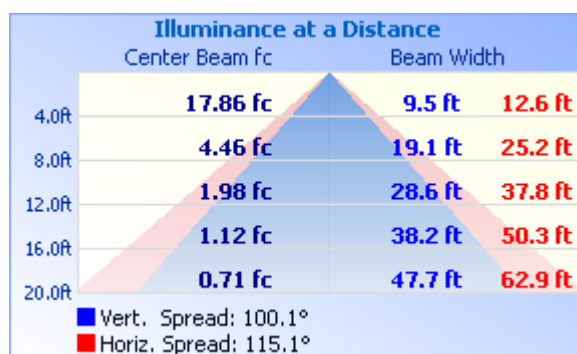
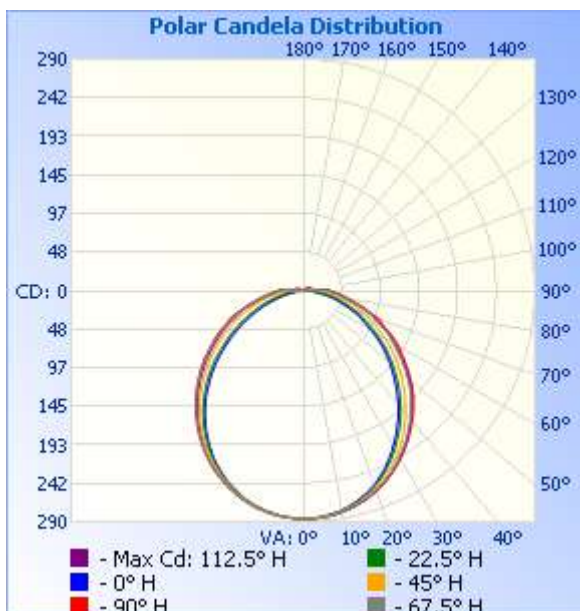


Table--1 UNIT: °C

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	286	286	286	286	286	286	286	286	286	286	286	286	286	286	286	286	
5	284	285	284	284	284	284	285	285	285	285	285	284	284	284	284	284	
10	280	280	280	279	279	280	280	281	281	282	281	280	279	279	280	280	
15	274	274	273	271	271	272	273	275	275	275	274	272	272	272	273	273	
20	265	264	263	260	260	261	264	266	268	267	264	262	261	261	263	265	
25	254	253	249	245	244	247	251	255	256	256	253	249	247	249	251	254	
30	240	239	234	227	225	229	236	241	243	242	238	233	231	233	236	240	
35	225	223	216	208	205	210	219	226	229	227	222	215	212	214	220	224	
40	208	205	196	187	185	190	199	208	212	209	203	195	191	195	201	207	
45	190	186	175	166	163	169	179	191	195	192	184	173	168	172	182	189	
50	171	166	155	145	142	147	159	171	176	173	162	149	143	149	160	169	
55	151	146	134	125	120	126	138	150	155	152	141	125	117	124	139	149	
60	130	125	113	102	97.8	104	117	130	137	132	119	101	92.2	100	117	128	
65	111	106	92.9	82.0	78.9	83.9	96.9	110	115	112	97.3	78.0	68.6	77.0	95.2	109	
70	93.5	87.9	75.5	63.4	59.0	66.0	79.6	92.8	98.7	94.5	78.4	57.4	46.9	56.2	76.2	90.6	
75	72.3	67.5	58.0	46.4	41.6	48.4	63.0	72.7	75.9	72.5	60.3	38.9	27.8	37.9	58.1	68.8	
80	54.5	51.6	42.4	30.8	25.6	33.2	45.3	54.6	57.3	54.4	42.9	24.0	11.3	23.2	41.6	52.3	
85	40.9	38.2	29.5	17.9	12.2	20.4	33.0	41.3	43.7	41.2	31.0	13.4	0.73	13.1	29.3	39.0	
90	30.9	28.4	20.6	9.08	2.43	11.3	23.5	30.8	33.2	30.8	21.8	7.24	0.00	7.14	20.5	29.1	
95	9.44	3.85	0.00	2.35	0.03	1.89	5.71	12.9	9.19	0.11	0.00	3.33	0.00	2.51	0.00	0.16	
100	0.06	2.29	9.05	3.03	2.17	3.69	10.9	0.37	0.08	0.06	7.61	1.88	0.00	1.70	5.94	0.07	
105	8.65	1.57	3.71	2.06	3.32	2.24	4.47	1.63	10.7	3.13	1.29	0.46	0.00	0.47	1.02	3.86	
110	6.36	1.40	1.66	1.49	2.75	1.47	1.92	1.77	7.75	5.96	0.05	0.07	0.00	0.07	0.05	5.83	
115	4.68	1.94	0.81	1.40	3.10	1.20	0.86	2.26	5.60	5.78	0.77	0.02	0.01	0.02	0.84	5.31	
120	3.48	1.72	0.71	1.80	2.72	1.02	0.73	1.98	4.10	4.35	1.35	0.11	0.01	0.10	1.36	3.99	
125	2.66	1.47	0.68	1.75	0.03	1.01	0.75	1.66	3.09	3.26	1.46	0.18	0.01	0.16	1.37	2.97	
130	2.08	1.24	0.50	1.00	0.03	1.01	0.60	1.40	2.37	2.50	1.41	0.13	0.01	0.08	1.25	2.27	
135	1.60	1.02	0.43	0.02	0.02	0.03	0.53	1.17	1.86	1.92	1.10	0.01	0.00	0.01	0.93	1.69	
140	1.21	0.80	0.32	0.03	0.03	0.02	0.43	0.96	1.45	1.46	0.78	0.01	0.01	0.00	0.58	1.24	
145	0.85	0.57	0.18	0.06	0.02	0.07	0.29	0.73	1.08	1.05	0.53	0.01	0.00	0.00	0.23	0.79	
150	0.51	0.33	0.02	0.08	0.02	0.07	0.11	0.48	0.72	0.68	0.29	0.00	0.00	0.00	0.00	0.39	
155	0.15	0.03	0.01	0.04	0.02	0.04	0.01	0.21	0.38	0.35	0.01	0.01	0.00	0.00	0.00	0.01	
160	0.01	0.01	0.01	0.03	0.01	0.03	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	
165	0.01	0.02	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	0.07	0.00	0.06	0.01	0.02	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	0.00	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 *******