

## **LM-79-08 Test Report**

For

# **LIGHT EFFICIENT DESIGN, LLC**

**(Brand Name: LIGHT EFFICIENT DESIGN)**

188 S.Northwest Highway, Cary, IL60013, USA

## **LED Luminaires**

Model name(s): LED-8091M30-OCC

Representative (Tested) Model: LED-8091M30-OCC

Model Different: N/A

Test & Report By:

*Ferrum Li*

Engineer: Ferrum Li

Date: May.13,2020

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-8091M30-OCC	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120-277Vac, 50/60Hz	
Nominal Power	320W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	Seoul Semiconductor Co., LTD	
LED Model	3000K:S1WM-5050308018-00000000-00001	
Sample Number	JBE190810-H-D1(3000K)	
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	Apr.19,2020
Date of Test	Apr.21,2020
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	2020-04-21	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-8091M30-OCC	Total Operating Time (min)	75

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE190810-H-D1	120.1	60	2.591	309.3	0.9942	7.07
	277.1	60	1.162	293.7	0.9126	15.85

### Chromaticity Measurement– Sphere-Spectroradiometer

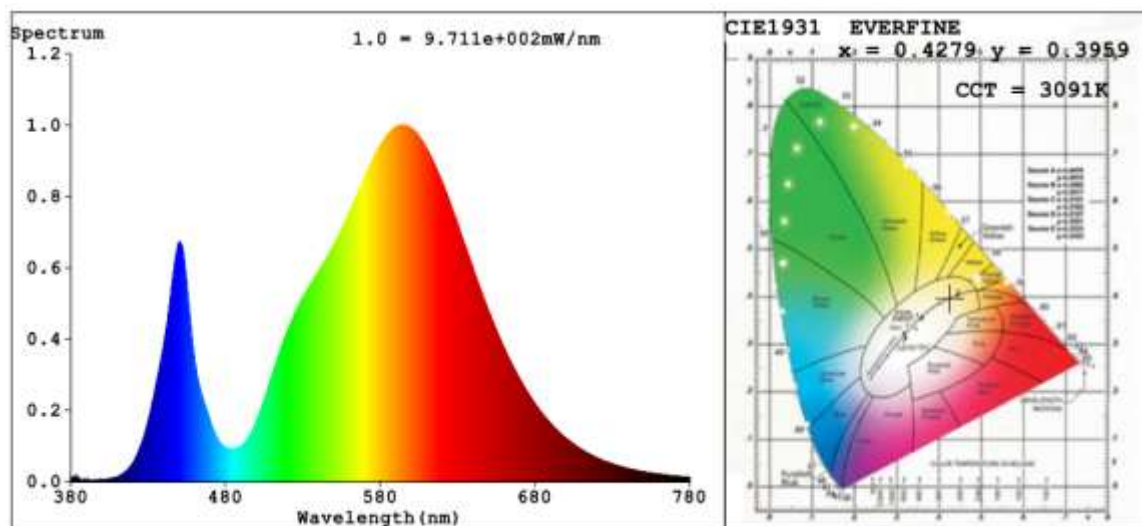
#### Method(Self-absorption:1.0406):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	69	R9	0
Frequency (Hz)	60	R2	82	R10	57
CCT (K)	3091	R3	91	R11	63
Duv	-0.0020	R4	69	R12	47
Chromaticity (x, y)	x=0.4279 y=0.3959	R5	68	R13	72
Chromaticity (u', v')	u'=0.2482 v'=0.5168	R6	74	R14	95
Color Rendering Index (CRI)	72.3	R7	79	R15	63
R9	0	R8	47	--	--

### Photometric Measurement– Goniophotometer Method(Test Distance: 26.000m):

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	42881	42485
Luminous Efficacy (lm/W)	138.66	144.64
Beam Angle (°)	112.5	--
Center Beam Candle Power (cd)	15525	--

## Spectral Power Distribution & Chromaticity Diagram

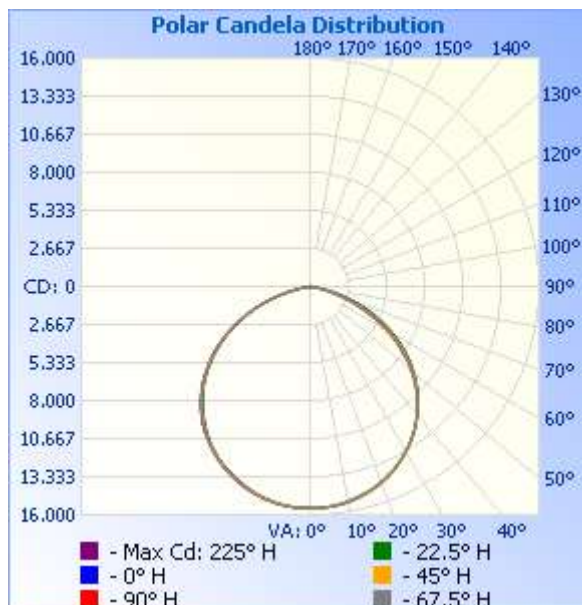


## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	12,182.5	28.4%
0-40	20,067.8	46.8%
0-60	35,516.5	82.8%
60-90	7,181.2	16.7%
70-100	2,206.2	5.1%
90-120	52.4	0.1%
0-90	42,697.8	99.6%
90-180	178.6	0.4%
0-180	42,876.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	1,470.9	3.4%	90-100	8.6	0%
10-20	4,235.5	9.9%	100-110	18.2	0%
20-30	6,476.2	15.1%	110-120	25.6	0.1%
30-40	7,885.2	18.4%	120-130	31.3	0.1%
40-50	8,206.6	19.1%	130-140	30.3	0.1%
50-60	7,242.2	16.9%	140-150	26.3	0.1%
60-70	4,983.6	11.6%	150-160	21.1	0%
70-80	2,008.0	4.7%	160-170	12.3	0%
80-90	189.6	0.4%	170-180	4.8	0%

## Photometric Data



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
4.0ft	970.3 fc	12.1 ft	11.9 ft
8.0ft	242.6 fc	24.1 ft	23.8 ft
12.0ft	107.8 fc	36.2 ft	35.7 ft
16.0ft	60.6 fc	48.2 ft	47.6 ft
20.0ft	38.8 fc	60.3 ft	59.4 ft

■ Vert. Spread: 112.9°  
■ Horiz. Spread: 112.1°

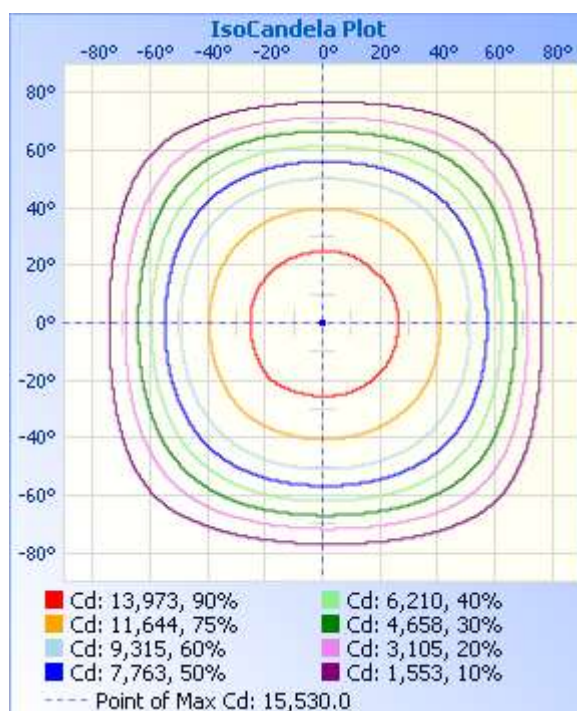
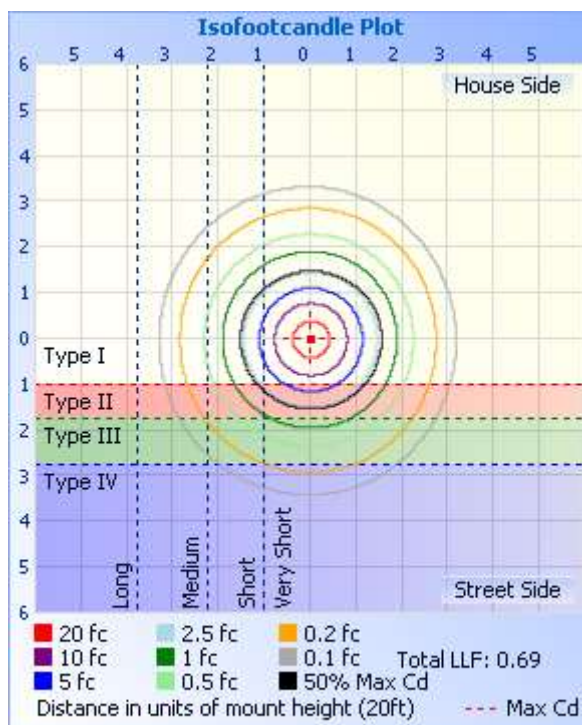




Table--1 UNIT: ×10ed

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	1553	1553	1553	1553	1553	1553	1553	1553	1553	1553	1553	1553	1553	1553	1553	1553	
5	1546	1549	1547	1548	1550	1546	1546	1547	1547	1546	1545	1546	1548	1546	1546	1549	
10	1527	1534	1528	1533	1533	1525	1528	1530	1529	1528	1528	1530	1528	1529	1529	1535	
15	1499	1505	1493	1502	1499	1495	1500	1501	1502	1499	1506	1500	1497	1500	1497	1504	
20	1459	1464	1449	1459	1453	1456	1455	1462	1463	1459	1471	1459	1455	1458	1456	1462	
25	1408	1412	1398	1405	1400	1402	1402	1407	1406	1406	1416	1402	1399	1403	1403	1409	
30	1345	1346	1336	1341	1337	1335	1335	1339	1333	1337	1343	1337	1336	1338	1339	1347	
35	1268	1269	1270	1262	1256	1259	1258	1261	1255	1257	1263	1259	1255	1258	1263	1268	
40	1177	1180	1181	1171	1167	1167	1167	1164	1161	1161	1177	1166	1163	1167	1170	1180	
45	1077	1076	1079	1069	1065	1063	1060	1057	1053	1055	1060	1064	1064	1063	1070	1079	
50	960	958	960	953	948	949	940	932	926	928	938	945	944	947	951	961	
55	832	829	824	823	820	817	805	791	782	787	803	811	812	815	820	831	
60	686	685	681	679	678	674	653	632	619	629	647	665	668	674	676	688	
65	524	527	527	529	527	519	492	462	450	458	484	506	514	514	522	527	
70	351	358	368	372	370	359	323	295	282	289	312	340	354	357	357	358	
75	183	193	208	216	218	201	170	154	145	149	158	182	200	200	193	188	
80	61.5	67.3	72.8	84.8	88.6	72.6	57.9	48.4	42.7	45.5	49.1	61.1	73.9	72.2	63.1	63.3	
85	12.5	12.9	12.7	12.4	12.1	10.8	10.6	10.3	10.2	10.0	9.64	9.28	8.94	10.0	11.3	12.4	
90	0.57	0.60	0.63	0.68	0.71	0.68	0.64	0.62	0.56	0.58	0.61	0.64	0.67	0.63	0.58	0.58	
95	0.66	0.69	0.76	0.78	0.79	0.81	0.80	0.83	0.64	0.68	0.70	0.74	0.73	0.69	0.63	0.59	
100	1.29	1.26	1.34	1.22	1.19	1.24	1.37	1.46	1.13	1.21	1.11	1.03	0.98	0.94	0.99	1.10	
105	1.84	1.85	1.87	1.66	1.60	1.69	1.93	2.07	1.66	1.68	1.83	1.81	2.12	1.78	1.71	1.49	
110	2.43	2.47	2.32	2.15	2.19	2.18	2.42	2.69	2.17	2.12	2.11	2.05	2.19	1.90	1.87	1.90	
115	2.98	3.01	2.88	2.45	2.57	2.47	2.99	3.39	2.66	2.63	2.44	2.24	2.42	2.07	2.16	2.27	
120	3.60	3.49	3.35	3.16	2.91	3.06	3.42	3.86	3.09	3.00	2.88	2.75	2.59	2.42	2.42	2.58	
125	4.14	4.04	3.50	3.86	4.04	3.96	3.64	4.40	3.41	3.42	3.03	3.33	3.19	2.98	2.52	2.96	
130	4.58	4.33	3.51	4.07	4.24	4.17	3.96	4.67	3.97	3.71	3.23	3.68	3.60	3.31	2.90	3.15	
135	4.69	4.33	3.66	4.19	4.25	4.40	4.21	4.58	4.26	3.81	3.53	3.76	3.66	3.34	3.03	3.31	
140	4.81	4.43	3.74	4.36	4.13	4.54	3.79	4.68	4.49	4.13	3.50	3.84	3.61	3.36	3.00	3.71	
145	4.99	4.23	4.01	4.63	4.26	4.67	3.69	4.67	4.76	4.26	3.65	4.08	3.62	3.66	3.44	3.82	
150	4.95	4.14	4.48	4.85	5.15	4.98	4.31	4.77	4.82	4.52	4.18	4.34	4.40	4.23	4.08	3.82	
155	4.60	3.96	4.73	5.12	5.32	5.03	4.66	4.79	4.56	4.64	4.18	4.43	4.65	4.48	4.23	3.83	
160	4.39	3.78	4.71	5.11	5.13	5.19	4.51	4.52	4.41	4.49	3.92	4.22	4.73	4.31	4.13	3.76	
165	4.43	3.74	4.61	4.54	4.66	4.65	4.34	4.16	4.35	4.26	3.54	4.06	4.09	4.03	3.82	3.77	
170	4.73	4.12	5.20	5.23	5.05	5.10	4.77	4.33	4.84	4.79	4.11	5.03	5.31	5.11	4.84	4.67	
175	4.98	4.60	5.37	5.34	5.67	5.25	5.03	4.59	5.12	5.11	4.63	5.22	5.47	5.71	4.98	4.99	
180	4.68	4.48	5.00	5.28	5.58	5.04	4.83	4.31	4.70	4.74	4.46	5.03	5.28	5.58	5.02	4.84	

**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	2019-07-09	2020-07-08
ST-R-333	Power Meter for Integrating Sphere	2019-06-27	2020-06-26
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	2019-07-09	2020-07-08
ST-R-358	Power Meter for Goniophotometer	2019-06-27	2020-06-26
ST-R-354	hygrothermograph for Goniophotometer	2019-06-28	2020-06-27
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 \*\*\*\*\***