

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-8091M50-OCC

Representative (Tested) Model: LED-8091M50-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-8091M50-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	5000K	
LED Manufacturer	Seoul Semiconductor Co., LTD	
LED Model	5000K:S1WM-5050508018-00000000-00001	
Sample Number	JBE190810-H-F1(5000K)	
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	Apr.19,2020
Date of Test	Apr.21,2020
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	2020-04-21	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-8091M50-OCC	Total Operating Time (min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE190810-	120.2	60	2.583	308.6	0.9942	7.16
H-F1	277.1	60	1.159	292.8	0.9121	15.63

Chromaticity Measurement– Sphere-Spectroradiometer

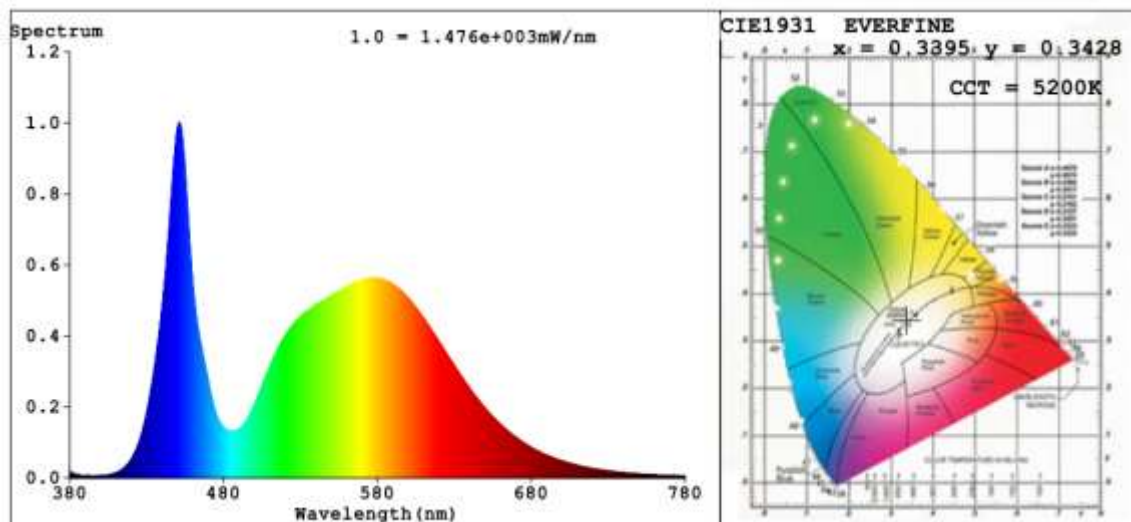
Method(Self-absorption:1.0418):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	73	R9	0
Frequency (Hz)	60	R2	81	R10	54
CCT (K)	5200	R3	85	R11	72
Duv	-0.0021	R4	75	R12	49
Chromaticity (x, y)	x=0.3395 y=0.3428	R5	74	R13	75
Chromaticity (u', v')	u'=0.2110 v'=0.4795	R6	73	R14	91
Color Rendering Index (CRI)	75.4	R7	82	R15	69
R9	0	R8	59	--	--

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

Parameter	Result	
Test Voltage (V)	120	277
Frequency (Hz)	60	60
Total Luminous (lm)	44334	43712
Luminous Efficacy (lm/W)	143.65	149.28
Beam Angle (°)	113.6	--
Center Beam Candle Power (cd)	15923	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	12,517.5	28.2%
0-40	20,654.9	46.6%
0-60	36,738.0	82.9%
60-90	7,408.6	16.7%
70-100	2,223.8	5%
90-120	53.5	0.1%
0-90	44,146.7	99.6%
90-180	181.9	0.4%
0-180	44,328.6	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	1,508.9	3.4%	90-100	8.8	0%
10-20	4,348.5	9.8%	100-110	18.5	0%
20-30	6,660.1	15.0%	110-120	26.3	0.1%
30-40	8,137.4	18.4%	120-130	31.7	0.1%
40-50	8,513.6	19.2%	130-140	30.7	0.1%
50-60	7,569.5	17.1%	140-150	26.7	0.1%
60-70	5,193.6	11.7%	150-160	21.6	0%
70-80	2,030.2	4.6%	160-170	12.8	0%
80-90	184.8	0.4%	170-180	4.9	0%

Photometric Data

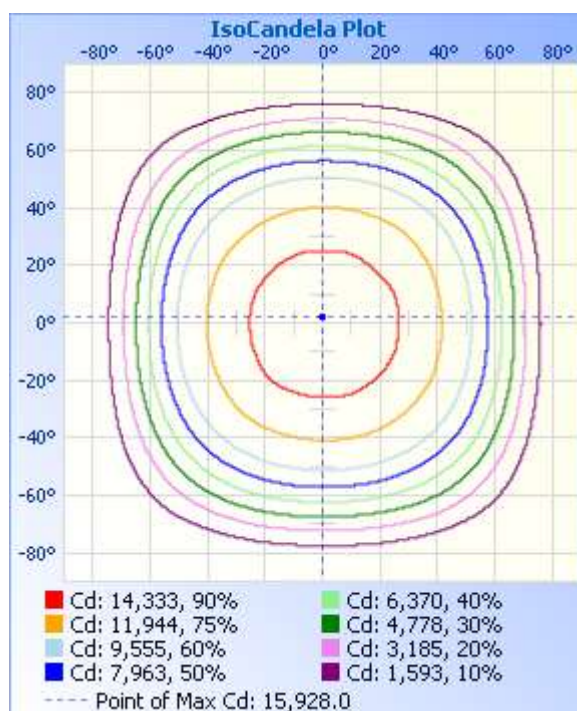
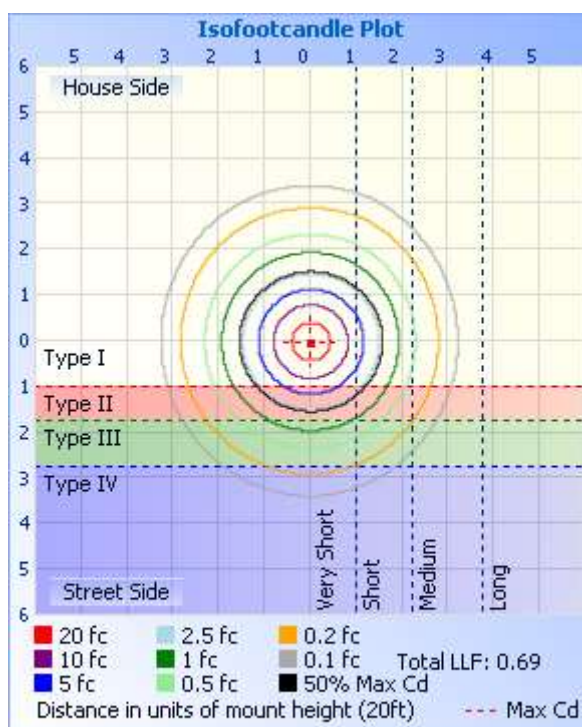
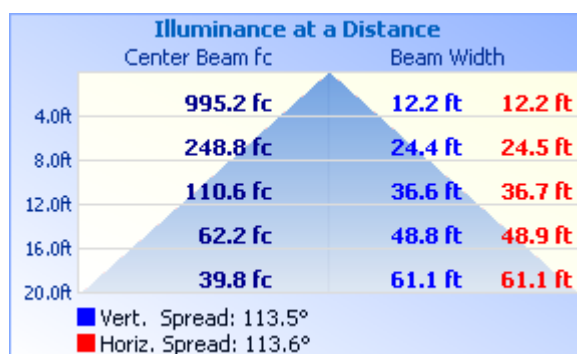
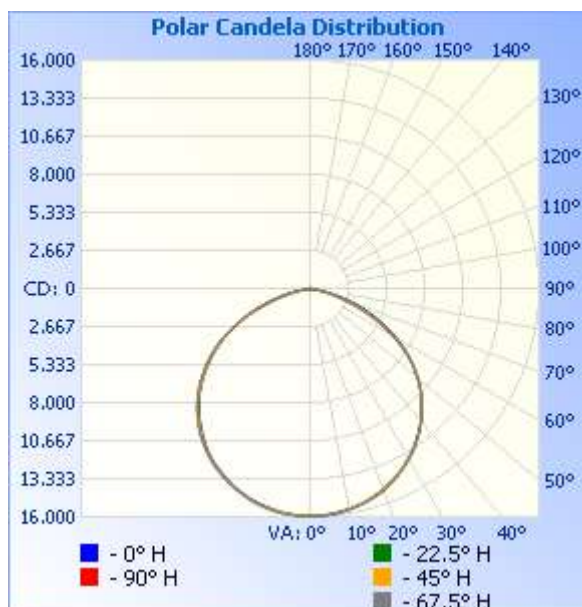


Table--1 UNIT: ×10cd

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	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	1592	
5	1585	1588	1587	1589	1591	1584	1585	1587	1586	1584	1583	1586	1587	1589	1587	1587	
10	1566	1572	1568	1572	1570	1567	1567	1569	1570	1566	1566	1570	1567	1572	1569	1574	
15	1538	1546	1533	1541	1537	1540	1538	1543	1542	1538	1544	1540	1535	1543	1540	1545	
20	1497	1504	1489	1500	1492	1500	1492	1502	1503	1499	1510	1500	1493	1499	1496	1502	
25	1447	1453	1437	1447	1440	1446	1438	1445	1443	1445	1454	1442	1438	1445	1444	1449	
30	1385	1385	1374	1381	1375	1376	1375	1381	1373	1376	1380	1376	1375	1380	1379	1388	
35	1309	1309	1308	1301	1294	1298	1299	1301	1299	1300	1301	1297	1294	1301	1303	1310	
40	1217	1219	1222	1208	1204	1206	1205	1210	1208	1205	1213	1203	1201	1206	1209	1220	
45	1115	1114	1119	1105	1103	1100	1102	1104	1104	1103	1096	1100	1101	1103	1108	1117	
50	996	993	991	985	982	983	978	984	982	982	978	980	980	983	987	997	
55	863	859	851	852	848	846	841	846	843	844	847	846	846	849	852	865	
60	710	708	700	701	699	693	685	676	672	681	697	699	699	704	704	716	
65	530	535	534	534	538	527	510	494	487	500	529	541	542	540	545	541	
70	339	344	354	364	371	353	328	311	306	317	348	378	379	381	373	353	
75	171	173	183	199	209	191	165	157	155	160	181	213	222	219	199	178	
80	53.7	54.4	55.2	67.1	73.0	63.4	49.5	46.9	45.6	51.6	61.3	76.0	89.4	80.8	67.4	60.2	
85	11.6	11.4	10.9	10.4	10.2	10.1	10.4	10.7	11.2	11.4	11.3	11.1	11.3	11.5	11.8	12.1	
90	0.57	0.59	0.64	0.69	0.73	0.70	0.63	0.61	0.57	0.60	0.63	0.68	0.70	0.67	0.60	0.57	
95	0.67	0.74	0.81	0.85	0.85	0.85	0.83	0.79	0.64	0.65	0.69	0.74	0.75	0.70	0.63	0.61	
100	1.37	1.45	1.51	1.32	1.26	1.28	1.36	1.37	1.02	1.10	1.03	1.00	0.99	0.96	1.06	1.17	
105	2.05	2.08	2.08	1.78	1.69	1.73	1.93	2.02	1.52	1.59	1.72	1.58	1.62	1.63	1.72	1.61	
110	2.63	2.71	2.54	2.30	2.30	2.26	2.48	2.69	2.09	2.04	1.98	2.02	2.12	1.92	1.92	2.03	
115	3.22	3.28	3.08	2.57	2.70	2.56	3.03	3.38	2.62	2.59	2.34	2.19	2.44	2.12	2.18	2.43	
120	3.80	3.73	3.53	3.26	3.00	3.09	3.48	3.88	3.07	2.96	2.81	2.67	2.58	2.44	2.47	2.70	
125	4.30	4.25	3.64	3.95	4.13	3.98	3.65	4.42	3.38	3.37	2.97	3.28	3.26	3.00	2.56	3.05	
130	4.70	4.51	3.62	4.16	4.29	4.17	3.90	4.65	3.96	3.61	3.17	3.64	3.67	3.37	2.96	3.23	
135	4.81	4.51	3.79	4.30	4.31	4.40	4.18	4.58	4.22	3.72	3.48	3.76	3.74	3.44	3.13	3.42	
140	4.95	4.60	3.84	4.49	4.18	4.55	3.82	4.67	4.45	4.08	3.50	3.91	3.73	3.49	3.10	3.76	
145	5.16	4.41	4.09	4.73	4.32	4.71	3.66	4.63	4.73	4.18	3.65	4.14	3.76	3.80	3.48	3.85	
150	5.13	4.26	4.59	4.98	5.26	5.16	4.24	4.76	4.81	4.52	4.28	4.52	4.56	4.39	4.18	3.86	
155	4.75	4.04	4.83	5.19	5.35	5.10	4.60	4.76	4.64	4.71	4.33	4.66	4.89	4.72	4.37	3.91	
160	4.55	3.87	4.82	5.29	5.29	5.32	4.55	4.53	4.48	4.59	4.09	4.46	4.90	4.54	4.35	3.93	
165	4.61	3.84	4.75	4.66	4.80	4.78	4.39	4.26	4.45	4.38	3.68	4.27	4.36	4.27	4.07	4.02	
170	4.90	4.21	5.30	5.38	5.18	5.25	4.86	4.39	4.92	4.90	4.24	5.27	5.58	5.44	5.10	4.86	
175	5.14	4.72	5.47	5.50	5.81	5.41	5.09	4.70	5.23	5.23	4.77	5.38	5.67	5.95	5.22	5.15	
180	4.80	4.63	5.16	5.39	5.73	5.17	4.90	4.47	4.87	4.91	4.61	5.15	5.40	5.73	5.15	4.94	

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 *******