

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

Representative (Tested) Model: LED-8091M30

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	
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-A1(3000K)	
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.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	2020-04-20	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-8091M30	Total Operating Time (min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE190810-	120.1	60	2.581	308.1	0.9945	8.85
H-A1	277.1	60	1.153	292.1	0.9144	15.20

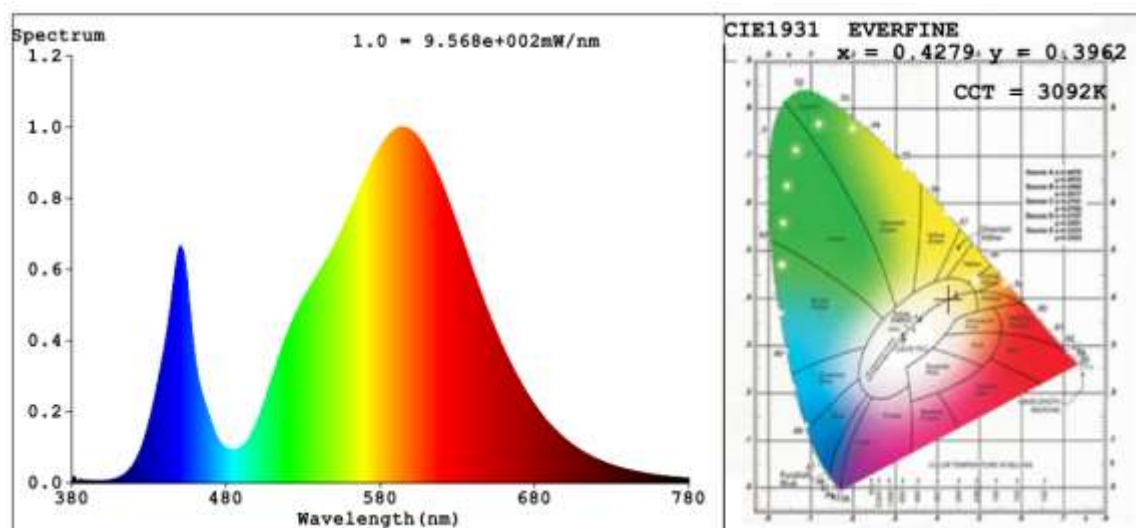
Chromaticity Measurement– Sphere-Spectroradiometer
Method(Self-absorption:1.0405):

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120	R1	69	R9	0
Frequency (Hz)	60	R2	82	R10	57
CCT (K)	3092	R3	92	R11	63
Duv	-0.0019	R4	68	R12	47
Chromaticity (x, y)	x=0.4279 y=0.3962	R5	68	R13	72
Chromaticity (u', v')	u'=0.2481 v'=0.5169	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)	43092	42807
Luminous Efficacy (lm/W)	139.85	146.53
Beam Angle (°)	113.0	--
Center Beam Candle Power (cd)	15620	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	12,227.4	28.4%
0-40	20,123.4	46.7%
0-60	35,664.7	82.8%
60-90	7,257.8	16.8%
70-100	2,173.6	5%
90-120	46.2	0.1%
0-90	42,922.4	99.6%
90-180	165.2	0.4%
0-180	43,087.6	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	1,479.5	3.4%	90-100	7.8	0%
10-20	4,254.6	9.9%	100-110	15.4	0%
20-30	6,493.3	15.1%	110-120	23.0	0.1%
30-40	7,895.9	18.3%	120-130	28.9	0.1%
40-50	8,222.2	19.1%	130-140	28.4	0.1%
50-60	7,319.1	17.0%	140-150	25.0	0.1%
60-70	5,092.0	11.8%	150-160	20.1	0%
70-80	2,006.6	4.7%	160-170	11.9	0%
80-90	159.2	0.4%	170-180	4.7	0%

Photometric Data

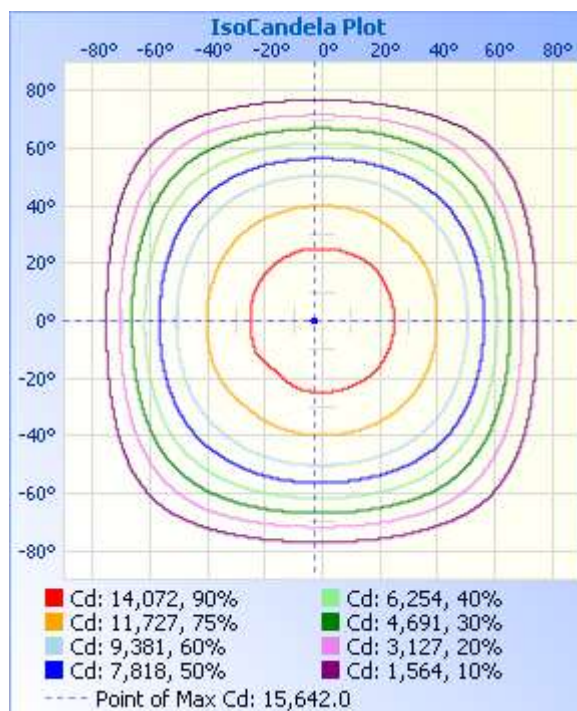
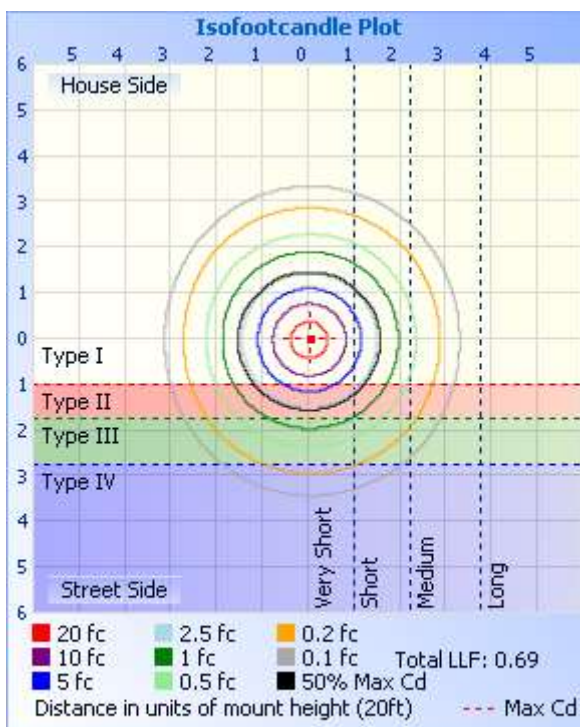
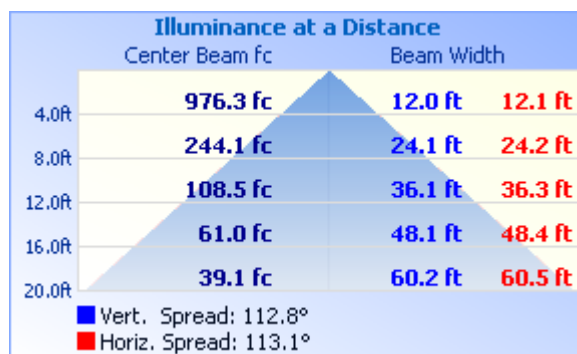
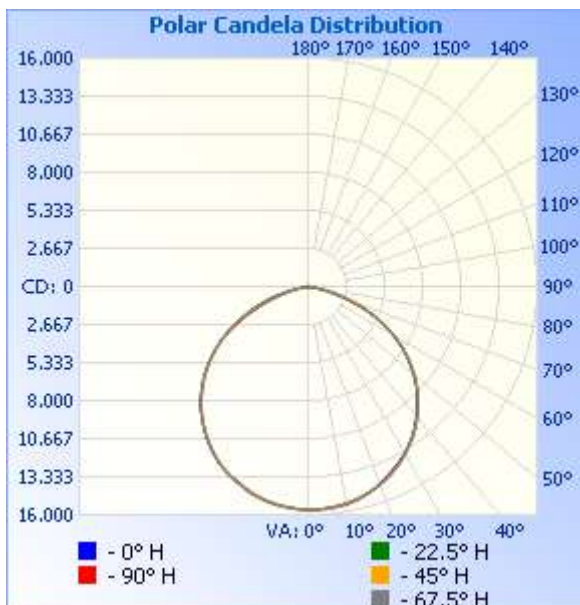


Table--1 UNIT: *10cd

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	1562	1562	1562	1562	1562	1562	1562	1562	1562	1562	1562	1562	1562	1562	1562	1562	
5	1550	1556	1555	1557	1557	1557	1559	1557	1563	1557	1553	1556	1555	1554	1554	1552	
10	1530	1539	1537	1540	1540	1542	1542	1542	1549	1540	1531	1536	1535	1537	1534	1532	
15	1496	1508	1508	1509	1512	1513	1515	1515	1518	1511	1494	1507	1502	1502	1499	1504	
20	1451	1465	1467	1466	1469	1472	1476	1476	1469	1471	1449	1461	1458	1453	1456	1457	
25	1404	1404	1413	1413	1415	1421	1420	1422	1409	1418	1387	1405	1402	1400	1400	1404	
30	1334	1342	1338	1349	1348	1354	1355	1354	1350	1351	1325	1337	1336	1331	1332	1333	
35	1255	1260	1255	1269	1271	1276	1278	1276	1278	1273	1254	1256	1254	1250	1250	1251	
40	1162	1173	1155	1177	1180	1183	1189	1187	1189	1183	1155	1163	1160	1156	1157	1160	
45	1058	1063	1053	1075	1078	1081	1087	1085	1087	1082	1057	1061	1057	1049	1050	1056	
50	942	946	937	958	962	969	971	969	969	964	941	943	938	932	934	938	
55	806	814	815	826	833	839	840	842	845	834	814	815	807	802	803	804	
60	643	659	670	685	691	697	700	700	702	695	678	672	665	661	658	655	
65	463	482	512	531	539	541	546	540	534	534	525	520	512	503	503	479	
70	284	301	338	367	380	381	382	357	347	352	366	361	357	349	332	300	
75	140	150	170	203	223	217	206	183	174	177	192	200	204	190	166	147	
80	34.9	41.4	49.7	68.5	88.8	79.9	65.3	60.6	55.3	59.0	59.3	69.1	77.5	62.0	47.9	42.6	
85	6.65	6.79	6.87	7.07	7.88	8.18	8.39	8.67	9.20	8.92	8.12	7.59	7.17	6.67	6.72	6.94	
90	0.51	0.51	0.54	0.58	0.64	0.61	0.55	0.52	0.48	0.51	0.56	0.62	0.67	0.63	0.60	0.56	
95	0.77	0.74	0.70	0.68	0.69	0.66	0.61	0.60	0.51	0.55	0.63	0.70	0.76	0.74	0.71	0.67	
100	1.33	1.26	1.16	1.03	1.00	0.98	0.98	1.01	0.73	0.80	0.92	1.00	1.05	1.03	1.03	1.02	
105	1.95	1.84	1.69	1.41	1.34	1.30	1.51	1.50	1.14	1.21	1.32	1.32	1.32	1.32	1.45	1.51	
110	2.63	2.44	2.09	1.87	1.92	1.78	1.86	2.04	1.62	1.67	1.67	1.79	1.84	1.75	1.77	2.04	
115	3.30	3.04	2.59	2.11	2.24	2.03	2.30	2.55	2.02	2.15	2.07	2.05	2.27	2.02	2.19	2.52	
120	3.88	3.46	2.97	2.79	2.61	2.58	2.68	3.01	2.42	2.53	2.57	2.65	2.45	2.41	2.57	2.86	
125	4.40	3.99	3.12	3.29	3.38	3.20	2.85	3.52	2.74	2.95	2.77	3.39	3.57	3.17	2.61	3.28	
130	4.71	4.17	3.08	3.46	3.62	3.36	3.12	3.78	3.29	3.22	2.97	3.81	3.91	3.61	3.04	3.56	
135	4.81	4.17	3.22	3.62	3.64	3.58	3.39	3.77	3.51	3.27	3.27	3.99	3.98	3.69	3.21	3.79	
140	4.94	4.31	3.30	3.78	3.51	3.71	3.25	3.96	3.71	3.62	3.25	4.05	4.05	3.71	3.17	4.23	
145	5.08	4.03	3.58	4.05	3.71	3.93	3.22	3.92	4.00	3.89	3.40	4.29	3.78	3.99	3.70	4.37	
150	4.98	3.91	4.02	4.38	4.55	4.51	3.73	4.07	4.18	4.08	3.90	4.56	4.74	4.50	4.43	4.36	
155	4.63	3.84	4.29	4.85	4.97	4.62	3.95	4.17	3.95	4.12	3.90	4.55	4.78	4.80	4.49	4.10	
160	4.45	3.84	4.26	4.61	4.69	4.55	3.88	3.90	3.75	3.98	3.47	4.44	4.58	4.42	4.57	4.17	
165	4.57	3.96	4.25	4.06	4.27	4.16	3.74	3.75	3.82	3.77	3.37	4.14	4.37	4.31	4.27	4.17	
170	4.83	4.30	4.85	4.85	4.89	4.79	4.44	3.95	4.47	4.43	4.11	4.85	5.25	4.97	4.99	4.73	
175	5.06	4.63	5.03	5.08	5.50	5.05	4.84	4.33	4.92	4.91	4.53	5.01	5.27	5.60	5.01	5.01	
180	4.64	4.41	4.76	5.08	5.49	4.96	4.87	4.32	4.72	4.75	4.40	4.79	5.07	5.45	4.95	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 *******