

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-8089M40-G5

Representative (Tested) Model: LED-8089M40-G5

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Sep.11,2019

Review By:



Johnson Sun

Manager: Johnson Sun

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-8089M40-G5	
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	80W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K	
LED Manufacturer	Samsung Electronics Co., LTD	
LED Model	SPMWHx228xxxxxxxxxx	
Sample Number	JBE190712-H-L1	
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.25,2019
Date of Test	Aug.26,2019
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	2019-08-26	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-8089M40-G5	Total Operating Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE190712-H-L1	120.0	60	0.7110	83.14	0.9744	12.20
	277.0	60	0.3239	82.65	0.9211	15.92

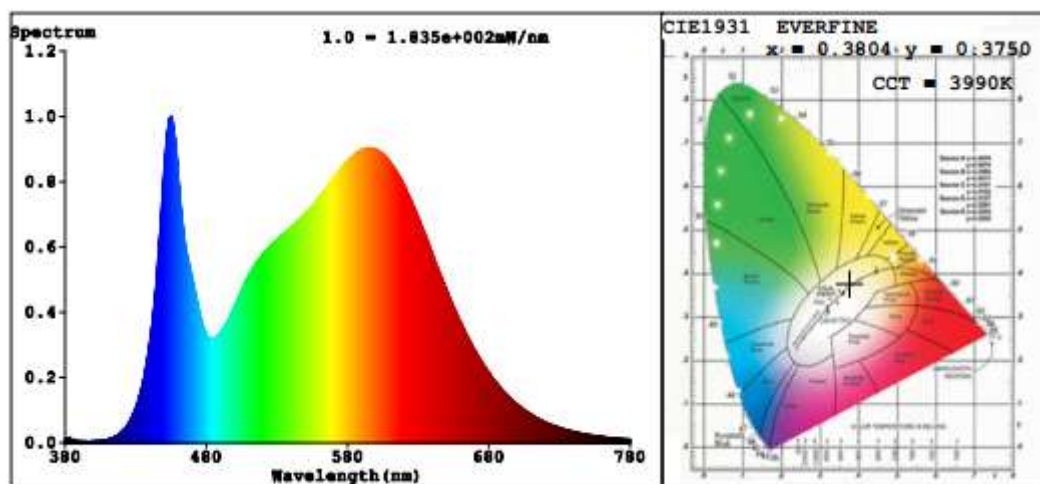
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	84	R9	15
Frequency (Hz)	60	R2	93	R10	81
CCT (K)	3990	R3	96	R11	81
Duv	-0.0008	R4	82	R12	64
Chromaticity (x, y)	x=0.3804 y=0.3750	R5	83	R13	86
Chromaticity (u', v')	u'=0.2257 v'=0.5008	R6	89	R14	98
Color Rendering Index (CRI)	84.5	R7	85	R15	78
R9	15	R8	66	--	--

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

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	10761	10716
Luminous Efficacy (lm/W)	129.43	129.66
Beam Angle (°)	114.2	--
Center Beam Candle Power (cd)	3756	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	2,949.0	27.4%
0-40	4,853.2	45.1%
0-60	8,610.3	80%
60-90	2,108.6	19.6%
70-100	801.6	7.4%
90-120	15.8	0.1%
0-90	10,718.9	99.6%
90-180	40.9	0.4%
0-180	10,759.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	356.5	3.3%	90-100	4.7	0%
10-20	1,026.9	9.5%	100-110	5.4	0%
20-30	1,565.6	14.6%	110-120	5.7	0.1%
30-40	1,904.1	17.7%	120-130	6.1	0.1%
40-50	1,980.4	18.4%	130-140	5.9	0.1%
50-60	1,776.7	16.5%	140-150	5.2	0%
60-70	1,311.7	12.2%	150-160	4.2	0%
70-80	667.0	6.2%	160-170	2.7	0%
80-90	129.8	1.2%	170-180	1.1	0%

Photometric Data

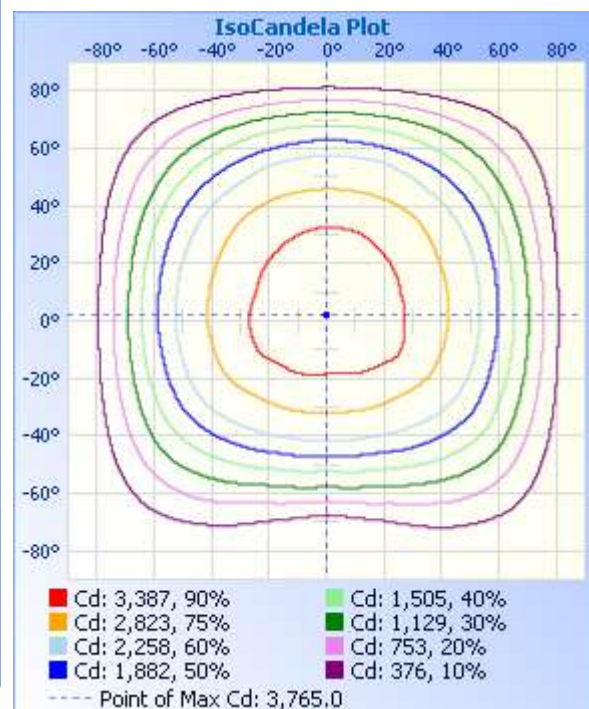
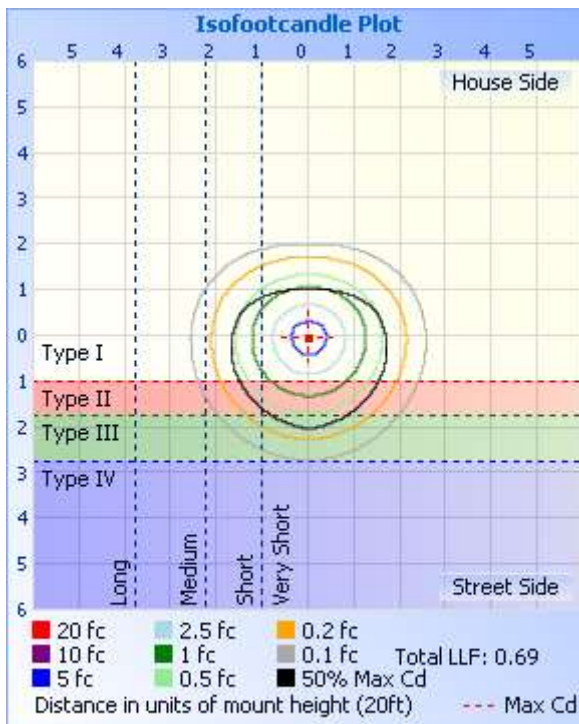
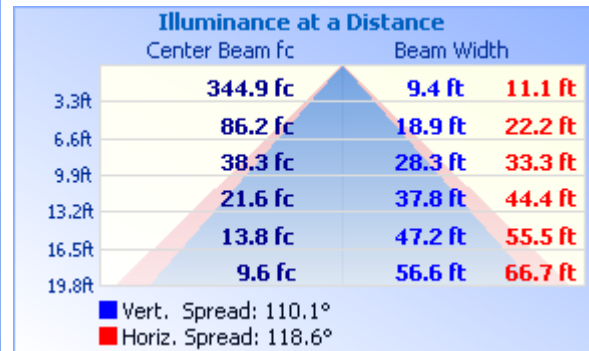
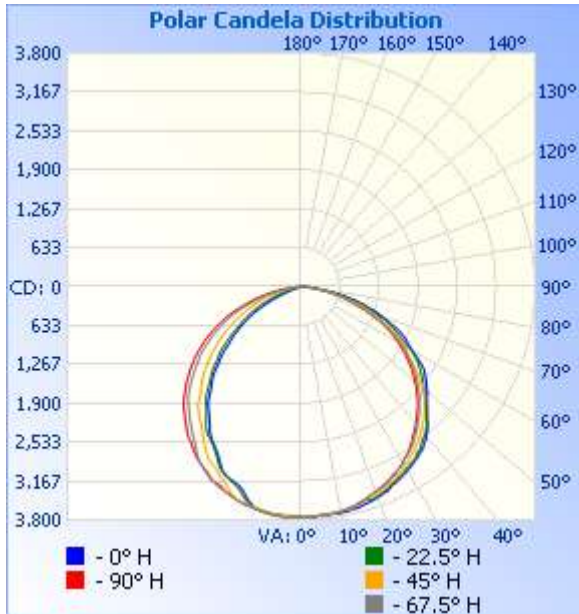


Table--1

UNIT: °C

Y (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	3756	3756	3756	3756	3756	3756	3756	3756	3756	3756	3756	3756	3756	3756	3756	3756		
5	3745	3747	3748	3753	3737	3733	3751	3733	3738	3751	3736	3753	3741	3732	3735	3760		
10	3722	3711	3708	3741	3733	3722	3706	3715	3731	3712	3688	3718	3702	3706	3700	3713		
15	3658	3656	3668	3699	3710	3661	3665	3648	3640	3654	3644	3594	3510	3567	3645	3661		
20	3559	3576	3605	3656	3646	3627	3574	3544	3558	3542	3468	3367	3340	3349	3479	3563		
25	3448	3458	3503	3564	3544	3527	3499	3440	3440	3421	3262	3188	3132	3174	3269	3472		
30	3298	3326	3380	3450	3453	3420	3364	3310	3303	3274	3088	2931	2890	2918	3091	3301		
35	3108	3156	3249	3334	3341	3298	3226	3152	3119	3031	2811	2676	2602	2690	2811	3037		
40	2911	2976	3057	3164	3167	3135	3040	2934	2905	2797	2606	2406	2319	2411	2596	2814		
45	2704	2741	2868	2897	2896	2882	2834	2715	2681	2560	2282	2082	2004	2069	2293	2593		
50	2433	2511	2598	2637	2677	2598	2580	2465	2415	2294	1985	1731	1636	1748	1999	2308		
55	2136	2228	2268	2401	2456	2363	2239	2192	2136	1982	1668	1392	1274	1395	1691	2019		
60	1839	1919	1976	2084	2094	2057	1934	1881	1833	1659	1344	1048	931	1058	1374	1704		
65	1496	1582	1641	1725	1796	1695	1590	1539	1488	1333	1026	728	540	728	1050	1371		
70	1138	1174	1235	1322	1385	1301	1196	1121	1090	958	726	415	160	415	752	1023		
75	767	796	829	924	963	897	787	754	723	616	423	204	26.4	203	459	663		
80	405	424	430	486	527	472	406	377	364	295	194	86.2	8.10	94.9	219	338		
85	115	107	100	180	223	178	99.3	90.0	89.6	67.7	44.6	21.1	3.50	26.2	55.3	86.7		
90	4.10	9.38	20.2	32.5	59.4	37.0	22.5	10.4	3.66	3.15	2.57	1.94	1.73	2.25	2.83	3.41		
95	3.36	3.30	2.88	4.44	5.72	4.45	2.78	3.25	2.99	3.06	3.02	2.57	2.36	2.82	3.43	4.00		
100	3.46	10.2	2.67	2.05	1.52	2.04	2.67	9.97	3.25	4.20	4.93	4.78	3.87	5.02	5.55	4.62		
105	4.40	8.50	8.22	2.57	1.57	2.40	7.47	8.40	4.04	4.62	5.14	4.99	4.50	5.12	5.44	4.94		
110	5.61	7.92	8.08	4.10	2.09	3.87	7.96	7.77	4.98	5.19	5.35	5.52	5.39	5.59	5.55	5.46		
115	6.29	7.87	7.08	3.94	2.56	3.76	7.01	7.77	5.50	5.93	5.92	5.62	5.96	5.54	5.86	5.88		
120	7.08	7.87	6.87	4.36	3.30	4.02	6.64	7.82	5.98	6.35	6.50	6.68	6.60	6.43	6.17	5.98		
125	7.75	8.02	6.61	5.66	5.69	5.53	6.28	8.24	6.29	6.87	6.45	7.83	8.53	7.74	6.33	6.51		
130	8.28	8.29	6.61	6.45	6.17	6.26	6.54	8.14	7.18	6.87	6.87	8.46	8.53	8.72	7.07	6.61		
135	8.39	7.87	7.13	7.25	6.85	7.10	7.11	7.93	7.34	6.98	7.50	8.46	9.10	8.41	7.17	6.82		
140	8.39	7.92	7.39	7.46	7.32	7.94	7.32	7.87	7.60	7.76	7.39	8.46	9.05	8.83	7.43	7.77		
145	8.70	7.82	7.70	8.35	8.00	8.62	7.37	7.93	8.39	7.87	7.71	8.67	8.95	8.99	8.53	7.98		
150	8.70	7.92	9.22	9.24	9.57	9.30	8.79	8.45	8.39	8.55	8.44	9.19	9.21	9.40	9.84	8.35		
155	8.65	8.29	10.1	9.61	10.1	9.72	9.94	9.13	7.97	8.81	8.39	9.14	8.47	9.03	9.21	8.45		
160	8.02	8.34	10.3	9.61	10.3	9.82	10.0	9.08	8.18	8.29	8.39	8.93	8.69	8.83	8.94	8.50		
165	9.07	8.50	10.4	9.98	10.2	10.0	10.1	8.92	8.65	8.50	8.39	9.03	8.74	9.09	8.79	8.77		
170	9.91	9.18	11.6	11.4	11.1	11.5	11.0	9.39	10.0	9.86	9.70	11.4	11.7	11.7	11.4	11.2		
175	10.3	9.96	12.3	11.7	12.6	12.1	11.8	10.0	10.7	10.4	10.2	12.4	12.2	13.3	12.2	12.6		
180	10.1	10.3	12.4	12.0	13.0	12.1	12.2	10.6	10.1	10.2	10.3	12.3	12.0	13.0	12.0	12.0		

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	2019-07-03	2020-07-02
ST-R-333	Power Meter for Integrating Sphere	2019-06-27	2020-06-26
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp	2019-07-03	2020-07-02
ST-R-358	Power Meter for Goniophotometer	2019-06-27	2020-06-26
Expand Uncertainty: Photometric Measurement (Sphere):2.66%, k=2 Chromaticity Measurement(Sphere):28.6K, k=2 Photometric Measurement(Goniophotometer):2.76%, k=2			

******* END OF REPORT *******