

## 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-8089M40C-G5

Representative (Tested) Model: LED-8089M40C-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-8089M40C-G5	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	220-347Vac, 50/60Hz	
Nominal Power	80W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K	
LED Manufacturer	Samsung Electronics Co., LTD	
LED Model	SPMWHx228xxxxxxxxx	
Sample Number	JBE190712-H-K1	
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"> <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

<p><b>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</b> Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 °C ± 1 °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.</p>
<p><b>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</b> Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 °C ± 1 °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.</p>
<p><b>3) Electrical Measurements:</b> Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25 °C ± 1 °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.</p>

**2.1 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2019-08-26	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	LED-8089M40C-G5	<b>Total Operating Time (min)</b>	90

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE190712-	277.0	60	0.3105	81.92	0.9526	15.62
H-K1	347.0	60	0.2642	83.00	0.9055	18.12

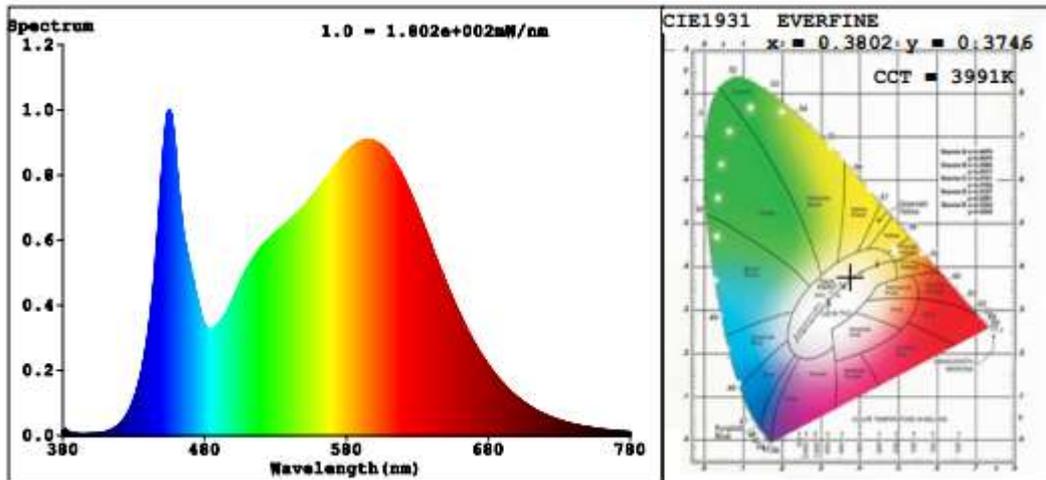
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	84	R9	15
Frequency (Hz)	60	R2	93	R10	82
CCT (K)	3991	R3	96	R11	80
Duv	-0.0009	R4	81	R12	64
Chromaticity (x, y)	x=0.3802 y=0.3746	R5	83	R13	86
Chromaticity (u', v')	u'=0.2258 v'=0.5006	R6	89	R14	98
Color Rendering Index (CRI)	84.5	R7	85	R15	78
R9	15	R8	65	--	--

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

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	10488	10499
Luminous Efficacy (lm/W)	128.03	126.49
Beam Angle (°)	113.1	--
Center Beam Candle Power (cd)	3698	--

**Spectral Power Distribution & Chromaticity Diagram**

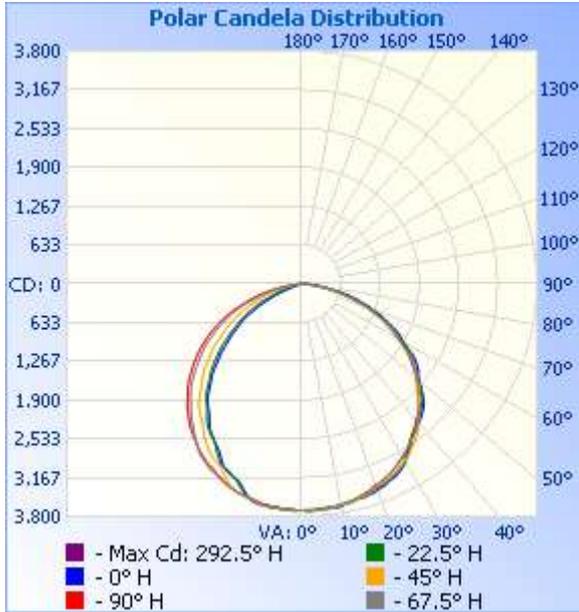


**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	2,909.1	27.7%
0-40	4,772.9	45.5%
0-60	8,434.2	80.4%
60-90	2,009.6	19.2%
70-100	757.2	7.2%
90-120	17.5	0.2%
0-90	10,443.8	99.6%
90-180	43.0	0.4%
0-180	10,486.7	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	351.5	3.4%	90-100	5.1	0%
10-20	1,013.6	9.7%	100-110	6.2	0.1%
20-30	1,543.9	14.7%	110-120	6.2	0.1%
30-40	1,863.8	17.8%	120-130	6.3	0.1%
40-50	1,934.1	18.4%	130-140	6.0	0.1%
50-60	1,727.2	16.5%	140-150	5.2	0%
60-70	1,257.5	12.0%	150-160	4.2	0%
70-80	627.6	6.0%	160-170	2.6	0%
80-90	124.4	1.2%	170-180	1.1	0%

## Photometric Data



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
3.3ft	339.5 fc	9.1 ft	11.1 ft
6.6ft	84.9 fc	18.2 ft	22.2 ft
9.9ft	37.7 fc	27.3 ft	33.3 ft
13.2ft	21.2 fc	36.4 ft	44.3 ft
16.5ft	13.6 fc	45.5 ft	55.4 ft
19.8ft	9.4 fc	54.5 ft	66.5 ft

■ Vert. Spread: 108.0°  
■ Horiz. Spread: 118.5°

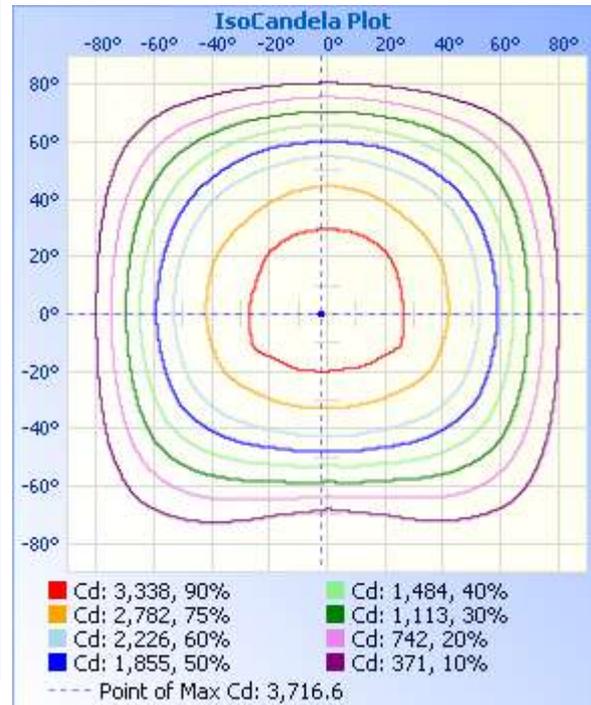
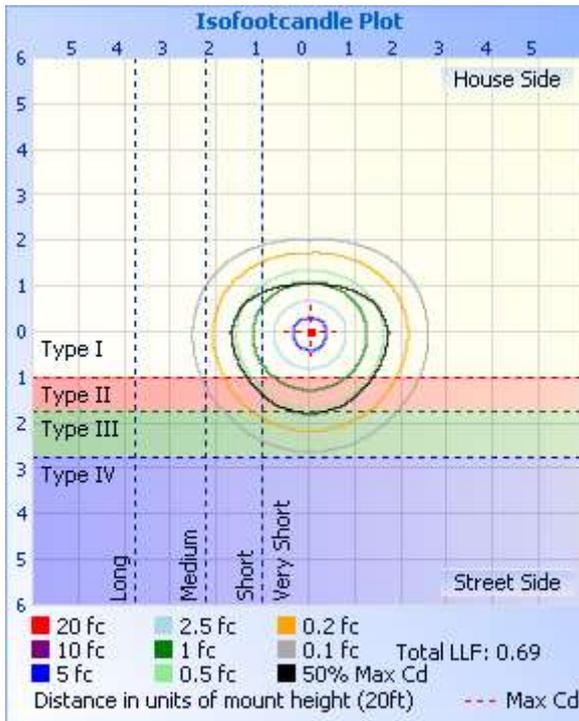


Table--1 UNIT: cd

C (DEG) γ (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	3698	3698	3698	3698	3698	3698	3698	3698	3698	3698	3698	3698	3698	3698	3698	3698	
5	3680	3696	3692	3693	3706	3681	3715	3690	3689	3701	3687	3700	3694	3676	3693	3691	
10	3646	3648	3648	3662	3693	3658	3669	3662	3661	3675	3665	3652	3667	3662	3667	3657	
15	3571	3599	3606	3623	3628	3619	3614	3599	3598	3617	3607	3569	3528	3539	3585	3594	
20	3491	3501	3525	3554	3585	3548	3527	3514	3494	3525	3477	3342	3324	3324	3459	3506	
25	3352	3381	3435	3470	3503	3469	3444	3400	3409	3416	3249	3167	3110	3164	3231	3388	
30	3223	3258	3317	3343	3337	3350	3328	3256	3267	3273	3071	2915	2881	2897	3058	3252	
35	3049	3066	3174	3097	3096	3095	3173	3096	3075	3047	2826	2706	2611	2673	2793	3021	
40	2851	2893	2903	2900	2944	2911	2935	2908	2889	2814	2613	2401	2356	2406	2592	2776	
45	2612	2670	2643	2742	2792	2744	2649	2713	2650	2583	2307	2095	2032	2086	2284	2539	
50	2356	2428	2412	2475	2483	2471	2429	2459	2420	2332	2030	1764	1663	1755	1995	2263	
55	2081	2129	2156	2188	2262	2200	2178	2163	2145	2012	1720	1427	1309	1412	1693	1968	
60	1777	1763	1785	1866	1890	1876	1804	1802	1838	1708	1400	1098	972	1080	1365	1661	
65	1443	1433	1486	1522	1586	1537	1505	1465	1515	1385	1083	779	585	750	1056	1333	
70	1070	1085	1097	1165	1197	1181	1112	1121	1125	1029	783	460	198	436	754	995	
75	717	696	676	776	836	782	700	725	765	669	478	243	54.1	226	461	637	
80	360	322	339	402	446	409	360	349	398	343	237	116	17.3	111	222	321	
85	91.9	71.5	94.3	171	221	173	99.1	88.5	111	93.5	70.6	37.5	6.14	34.5	62.1	82.1	
90	3.72	7.99	17.8	31.8	60.3	35.2	20.5	9.19	3.50	3.19	2.46	1.78	1.52	1.83	2.83	3.24	
95	3.24	3.25	2.62	3.92	5.10	4.02	2.52	3.04	2.93	4.26	3.20	2.25	2.10	2.51	3.67	5.79	
100	3.87	9.92	3.04	1.98	1.36	1.93	2.62	10.2	3.41	7.08	9.46	7.14	4.34	7.34	9.47	7.10	
105	4.92	8.67	7.59	2.54	1.82	2.39	7.80	8.69	4.24	6.35	7.54	6.27	4.81	6.37	7.64	6.65	
110	6.17	8.03	8.18	3.50	1.98	3.71	8.44	7.96	4.98	6.41	6.97	6.27	5.70	6.37	6.97	6.76	
115	6.91	8.29	7.07	3.50	2.46	3.71	7.18	8.22	5.50	6.72	7.02	6.27	6.17	6.37	6.97	6.91	
120	7.64	8.35	6.81	4.27	3.29	4.11	6.81	8.27	6.02	6.98	7.38	7.21	7.01	7.00	6.97	6.91	
125	8.27	8.61	6.29	5.48	5.32	5.58	6.29	8.37	6.38	7.35	7.12	8.25	8.57	8.15	6.97	7.17	
130	8.89	8.45	6.39	6.11	6.11	6.16	6.34	8.48	7.27	7.25	7.54	8.83	8.26	9.04	7.49	7.17	
135	8.84	8.24	6.65	6.79	6.64	7.15	6.91	8.27	7.43	7.40	7.91	8.77	9.36	9.03	7.65	7.48	
140	8.84	8.35	7.02	7.36	6.79	7.73	7.33	8.17	7.69	8.04	7.91	8.41	9.46	8.72	7.81	8.17	
145	9.16	8.14	7.65	7.83	7.42	8.41	7.23	8.17	8.32	8.29	8.22	8.36	9.25	8.72	8.80	8.32	
150	9.21	8.24	9.10	8.40	8.98	8.72	8.69	8.53	8.32	8.56	9.11	8.88	9.41	9.09	10.00	8.64	
155	8.74	8.45	10.1	9.24	9.72	9.19	9.58	9.31	8.06	9.13	8.80	9.29	8.83	9.19	9.22	8.64	
160	8.16	8.50	10.2	9.29	9.43	9.35	9.90	9.26	8.01	8.35	8.59	9.29	8.73	9.04	9.11	8.43	
165	8.74	8.50	10.3	9.56	9.72	9.92	10.00	8.85	8.37	8.19	8.59	9.24	8.89	9.25	9.11	8.95	
170	9.79	9.08	11.4	11.1	11.0	11.5	11.1	9.21	9.73	9.77	9.95	11.2	11.7	11.6	11.4	11.3	
175	9.99	9.76	11.9	11.2	12.1	11.7	11.8	9.73	10.2	10.2	10.1	12.2	12.1	12.9	12.0	12.5	
180	9.89	10.3	12.4	11.5	12.4	12.2	12.5	10.2	9.84	9.97	10.2	11.9	11.5	12.5	11.9	11.9	

**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 \*\*\*\*\***