

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-8089M50C-G5

Representative (Tested) Model: LED-8089M50C-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-8089M50C-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	5000K	
LED Manufacturer	Samsung Electronics Co., LTD	
LED Model	SPMWHx228xxxxxxxxxx	
Sample Number	JBE190712-H-M1	
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-8089M50C-G5	Total Operating Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE190712-	277.0	60	0.3124	82.33	0.9515	12.50
H-M1	347.0	60	0.2659	83.55	0.9056	15.81

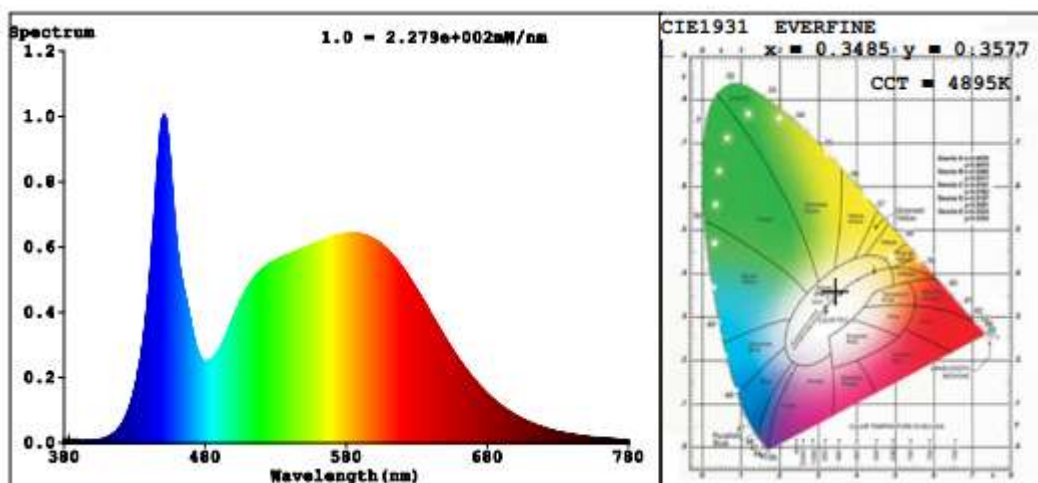
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	82	R9	16
Frequency (Hz)	60	R2	89	R10	72
CCT (K)	4895	R3	93	R11	82
Duv	0.0017	R4	83	R12	59
Chromaticity (x, y)	x=0.3485 y=0.3577	R5	82	R13	84
Chromaticity (u', v')	u'=0.2113 v'=0.4881	R6	84	R14	96
Color Rendering Index (CRI)	84.0	R7	89	R15	77
R9	16	R8	70	--	--

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

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	10638	10675
Luminous Efficacy (lm/W)	129.21	127.77
Beam Angle (°)	113.9	--
Center Beam Candle Power (cd)	3719	--

Spectral Power Distribution & Chromaticity Diagram

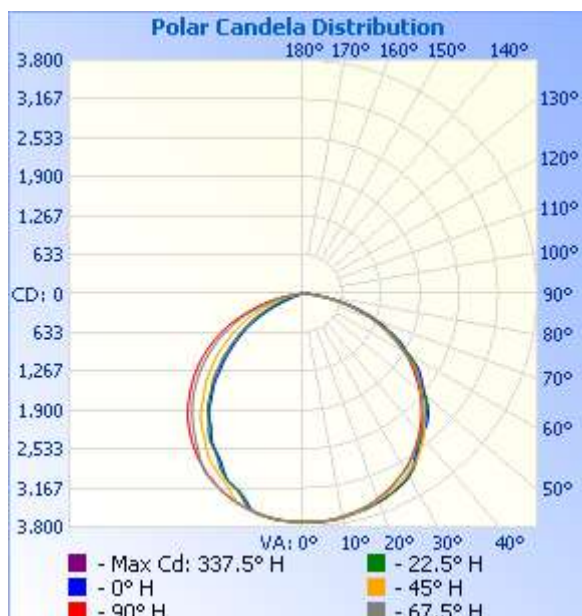


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	2,930.7	27.6%
0-40	4,821.7	45.3%
0-60	8,548.5	80.4%
60-90	2,045.7	19.2%
70-100	768.2	7.2%
90-120	17.4	0.2%
0-90	10,594.2	99.6%
90-180	43.0	0.4%
0-180	10,637.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	353.5	3.3%	90-100	5.1	0%
10-20	1,019.7	9.6%	100-110	6.1	0.1%
20-30	1,557.5	14.6%	110-120	6.2	0.1%
30-40	1,891.0	17.8%	120-130	6.4	0.1%
40-50	1,965.4	18.5%	130-140	6.0	0.1%
50-60	1,761.4	16.6%	140-150	5.2	0%
60-70	1,282.6	12.1%	150-160	4.2	0%
70-80	639.6	6.0%	160-170	2.7	0%
80-90	123.5	1.2%	170-180	1.1	0%

Photometric Data



Illuminance at a Distance

Center Beam fc	Beam Width	
341.5 fc	9.2 ft	11.3 ft
85.4 fc	18.5 ft	22.5 ft
37.9 fc	27.7 ft	33.8 ft
21.3 fc	37.0 ft	45.0 ft
13.7 fc	46.2 ft	56.3 ft
9.5 fc	55.5 ft	67.6 ft

■ Vert. Spread: 109.0°
■ Horiz. Spread: 119.2°

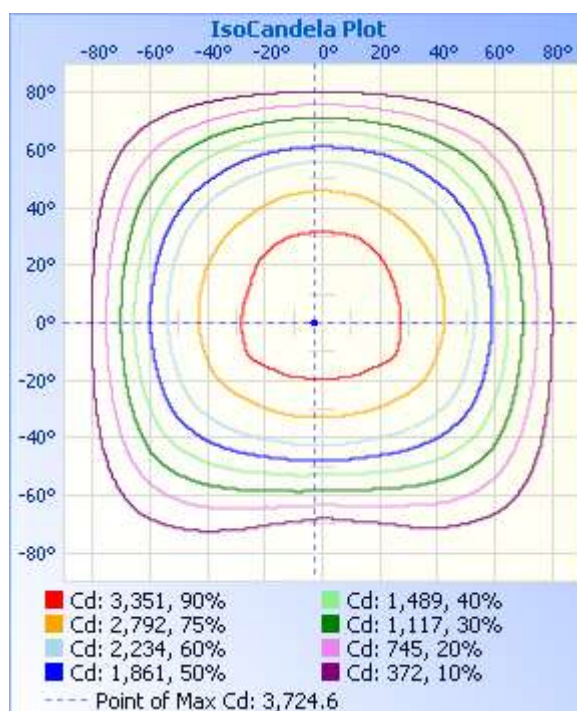
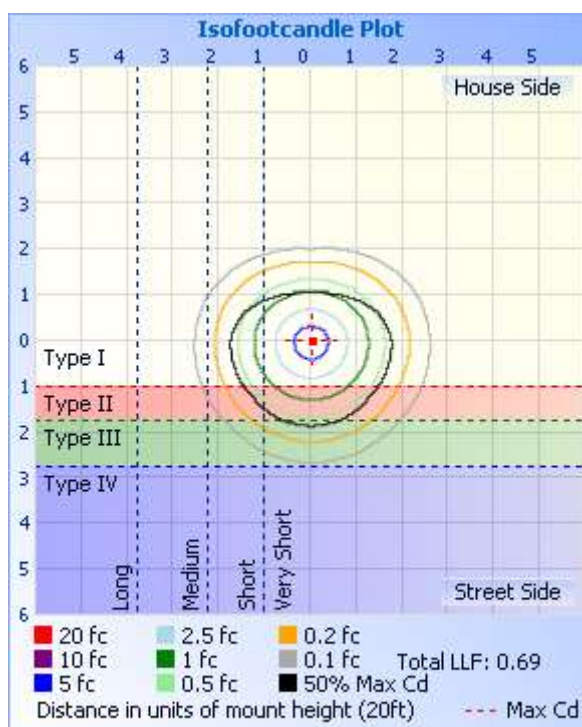


Table--1 UNIT: °C

T (°C)	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	3719	3719	3719	3719	3719	3719	3719	3719	3719	3719	3719	3719	3719	3719	3719	3719	
5	3707	3705	3706	3717	3722	3719	3718	3718	3720	3718	3712	3714	3713	3706	3714	3709	
10	3664	3665	3684	3693	3709	3695	3703	3682	3683	3679	3673	3683	3677	3672	3674	3676	
15	3611	3613	3624	3649	3658	3656	3654	3627	3640	3625	3617	3580	3515	3567	3607	3611	
20	3517	3521	3551	3597	3612	3597	3583	3548	3549	3549	3467	3345	3325	3334	3440	3528	
25	3401	3421	3463	3525	3539	3531	3491	3444	3441	3444	3257	3181	3108	3162	3243	3412	
30	3254	3281	3341	3420	3443	3429	3381	3308	3316	3303	3086	2932	2890	2910	3069	3257	
35	3081	3114	3202	3220	3191	3237	3247	3152	3137	3080	2844	2713	2619	2679	2811	3014	
40	2881	2928	3007	2977	3016	2989	3042	2974	2941	2846	2622	2431	2352	2404	2593	2786	
45	2647	2711	2714	2810	2867	2818	2756	2763	2723	2615	2322	2110	2030	2079	2271	2544	
50	2380	2460	2465	2593	2575	2605	2507	2527	2474	2350	2042	1775	1661	1745	1972	2265	
55	2092	2178	2213	2257	2327	2271	2265	2249	2199	2047	1735	1426	1300	1398	1665	1970	
60	1781	1827	1845	1974	1959	1996	1887	1897	1894	1741	1408	1097	955	1055	1334	1655	
65	1448	1456	1533	1594	1659	1618	1578	1521	1564	1405	1085	770	566	725	1017	1313	
70	1067	1118	1121	1225	1249	1248	1167	1187	1173	1050	778	454	187	411	713	958	
75	706	707	710	795	867	817	775	767	800	685	478	235	54.2	211	424	602	
80	349	330	353	402	438	416	386	393	422	351	234	113	17.5	99.3	195	290	
85	89.3	74.4	84.9	159	209	169	95.3	97.4	127	101	70.7	38.1	6.00	32.8	54.1	72.5	
90	3.68	7.55	16.9	29.8	58.4	34.6	20.8	9.15	3.72	3.29	14.9	1.78	1.40	1.83	2.64	3.07	
95	3.14	3.03	2.53	3.71	4.92	3.76	2.48	3.02	2.81	4.38	3.29	2.32	1.99	2.37	3.41	5.77	
100	3.78	9.45	2.59	2.24	1.40	1.81	2.48	10.2	3.25	6.96	9.57	7.36	4.20	7.05	9.58	7.00	
105	4.97	8.32	7.16	2.37	1.35	1.94	8.03	8.51	4.06	6.30	7.65	6.85	4.79	6.43	7.77	6.73	
110	6.10	7.97	7.86	3.82	1.89	2.53	8.31	7.94	4.87	6.32	7.41	6.72	5.66	6.37	7.01	6.91	
115	6.92	8.15	6.95	3.62	2.42	3.28	7.13	7.87	5.57	6.81	7.27	6.46	6.46	6.31	7.05	6.99	
120	7.73	8.30	6.68	4.13	3.22	4.14	6.80	7.87	6.00	6.97	7.35	7.54	7.11	7.01	7.12	6.96	
125	8.38	8.59	6.32	5.43	5.17	5.49	6.46	8.03	6.33	7.27	7.33	8.46	8.67	8.30	7.02	7.27	
130	8.76	8.64	6.42	6.08	5.98	6.16	6.60	8.09	7.18	7.34	7.65	8.99	8.46	9.17	7.50	7.31	
135	8.80	8.31	6.84	6.73	6.51	6.90	6.85	8.03	7.43	7.40	7.90	8.99	9.59	9.27	7.77	7.54	
140	8.85	8.28	7.22	7.37	6.79	7.71	7.19	8.03	7.73	7.96	8.03	8.51	9.45	8.99	7.82	8.24	
145	9.08	8.21	7.76	7.86	7.27	8.35	7.31	8.03	8.33	8.27	8.30	8.62	9.43	8.90	8.85	8.38	
150	8.90	8.38	9.21	8.35	8.94	8.84	8.63	8.56	8.41	8.59	8.84	8.78	9.38	9.11	10.3	8.57	
155	8.71	8.59	9.96	9.15	9.59	9.32	9.60	9.32	7.95	8.97	8.62	9.20	8.83	9.19	9.44	8.57	
160	8.06	8.55	10.2	9.39	9.85	9.48	9.87	9.27	8.00	8.44	8.62	9.30	8.72	9.06	9.01	8.57	
165	8.65	8.69	10.3	9.51	10.1	9.86	10.1	8.89	8.51	8.16	8.62	9.26	8.83	9.33	9.07	9.05	
170	9.71	8.91	11.3	11.0	11.0	11.5	11.2	9.32	9.79	9.73	9.91	11.3	11.7	11.7	11.5	11.3	
175	10.1	9.67	12.1	11.2	12.1	11.8	11.9	9.70	10.3	10.3	10.0	12.0	12.1	12.9	11.8	12.3	
180	9.78	10.3	11.8	11.6	12.7	12.0	12.0	10.3	9.79	9.89	10.1	11.8	11.5	12.4	11.8	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 *******