

## LM-79-08 Test Report

For

# LIGHT EFFICIENT DESIGN, LLC

(Brand Name: LIGHT EFFICIENT DESIGN)

Suite 301,188 S.Northwest Highway, Cary, IL60013, USA

## LED Luminaires

Model name(s): LED-8242M40

Representative (Tested) Model: LED-8242M40

Model Different: All construction and rating are the same, except CCT

Test & Report By:

*Garman Mo*

Engineer: Garman Mo

Date: Apr.18,2019

Review By:

*Johnson Sun*

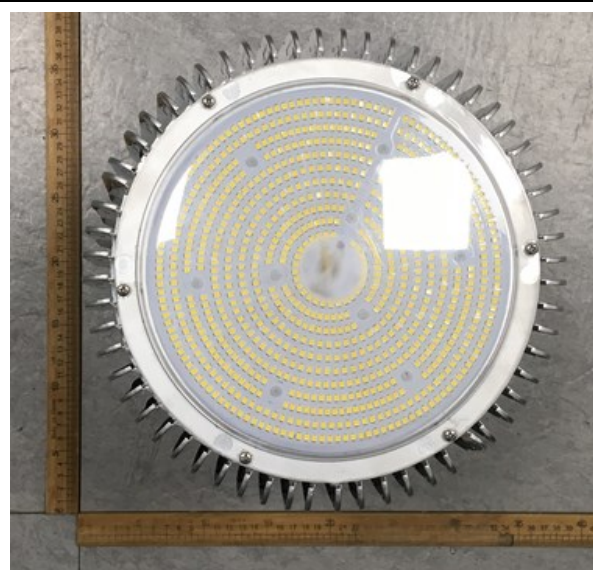
Manager: Johnson Sun

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-8242M40	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	100-277Vac, 50/60Hz	
Nominal Power	270W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K	
LED Manufacturer	Samsung Electronics Co., LTD	
LED Model	SPMWHx228xxxxxxxxxx	
Sample Number	JBE190113-H-BA1	
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.11,2019
Date of Test	Apr.12,2019
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****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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  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	2019-04-12	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LED-8242M40	Total Operating Time (min)	90

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE190113-	120.0	60	2.382	283.8	0.9931	9.71
H-BA1	277.0	60	1.024	260.3	0.9170	15.08

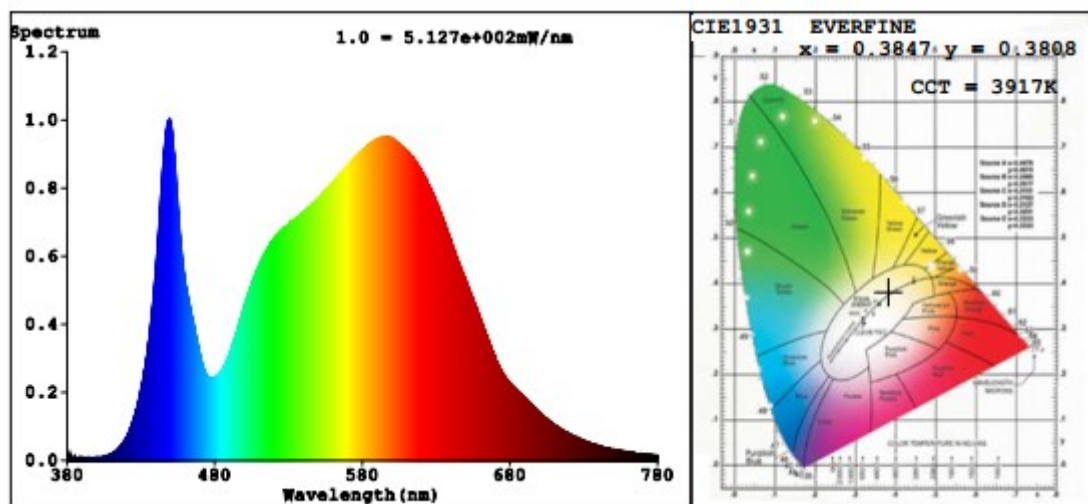
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	15
Frequency (Hz)	60	R2	88	R10	73
CCT (K)	3917	R3	93	R11	83
Duv	0.0007	R4	84	R12	64
Chromaticity (x, y)	x=0.3847 y=0.3808	R5	82	R13	84
Chromaticity (u', v')	u'=0.2263 v'=0.5040	R6	84	R14	96
Color Rendering Index (CRI)	83.7	R7	87	R15	77
R9	15	R8	68	--	--

**Photometric Measurement – Goniophotometer Method (Test Distance: 26.00m):**

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	34443	34416
Luminous Efficacy (lm/W)	121.36	132.24
Beam Angle (°)	113.4	--
Center Beam Candle Power (cd)	12019	--

## Spectral Power Distribution & Chromaticity Diagram

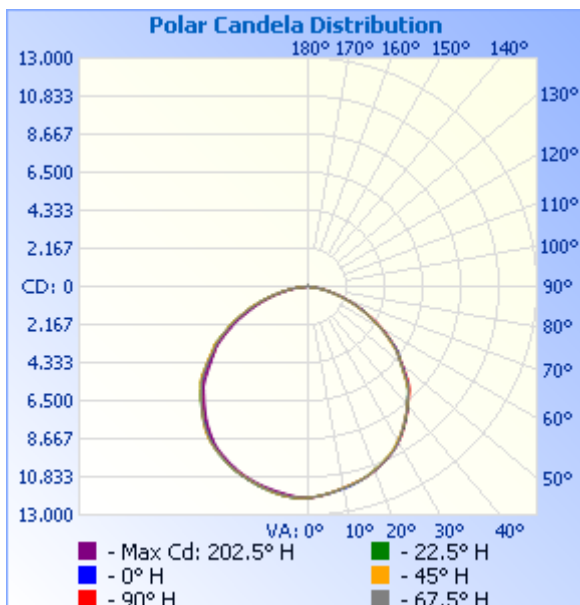


## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	9,383.3	27.2%
0-40	15,492.0	45%
0-60	27,521.2	79.9%
60-90	6,610.8	19.2%
70-100	2,622.7	7.6%
90-120	195.9	0.6%
0-90	34,132.0	99.1%
90-180	307.1	0.9%
0-180	34,439.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	1,131.1	3.3%	90-100	73.0	0.2%
10-20	3,249.7	9.4%	100-110	87.5	0.3%
20-30	5,002.4	14.5%	110-120	35.4	0.1%
30-40	6,108.7	17.7%	120-130	26.0	0.1%
40-50	6,375.3	18.5%	130-140	25.7	0.1%
50-60	5,653.9	16.4%	140-150	23.9	0.1%
60-70	4,061.2	11.8%	150-160	19.1	0.1%
70-80	2,053.5	6.0%	160-170	11.7	0%
80-90	496.2	1.4%	170-180	4.8	0%

## Photometric Data



**Illuminance at a Distance**

Center Beam fc	Beam Width	
3.3ft	1,103.6 fc	10.1 ft 10.0 ft
6.6ft	275.9 fc	20.1 ft 20.0 ft
9.9ft	122.6 fc	30.2 ft 30.0 ft
13.2ft	69.0 fc	40.2 ft 40.0 ft
16.5ft	44.1 fc	50.3 ft 50.0 ft
19.8ft	30.7 fc	60.3 ft 60.0 ft

■ Vert. Spread: 113.4°  
■ Horiz. Spread: 113.2°

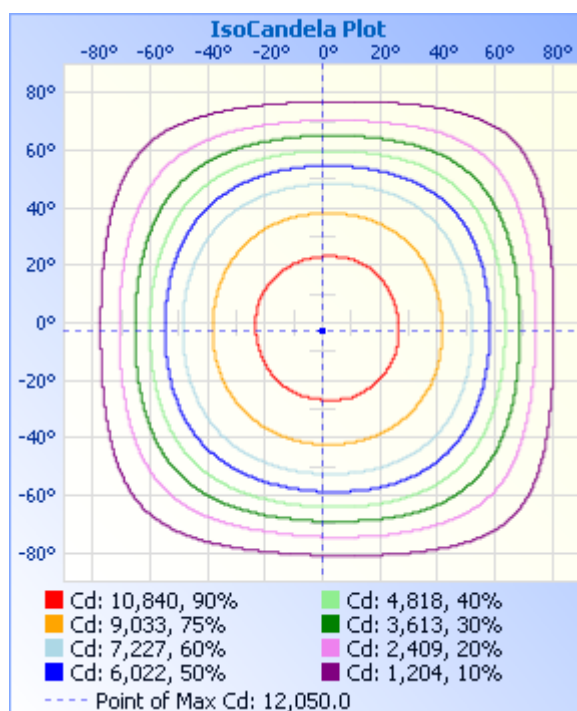
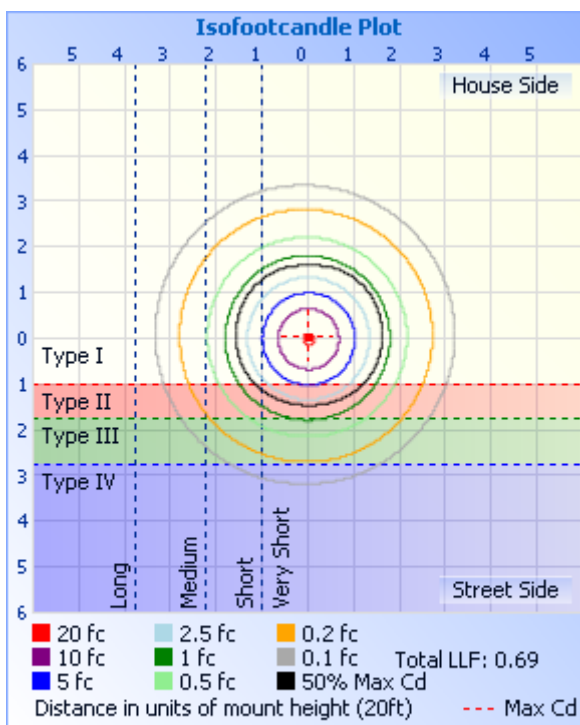




Table--1 UNIT: ×10cd

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	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	
5	1194	1191	1188	1187	1186	1185	1184	1185	1186	1189	1192	1197	1201	1202	1201	1199	
10	1178	1173	1169	1169	1167	1163	1162	1163	1162	1165	1171	1176	1183	1187	1185	1183	
15	1156	1152	1149	1146	1143	1141	1141	1142	1141	1144	1151	1157	1161	1162	1160	1158	
20	1130	1124	1120	1118	1111	1108	1109	1112	1114	1116	1123	1131	1133	1136	1133	1134	
25	1094	1088	1085	1079	1072	1069	1069	1073	1074	1075	1083	1093	1095	1103	1100	1100	
30	1053	1046	1037	1028	1022	1019	1016	1022	1024	1031	1040	1050	1055	1060	1060	1059	
35	991	984	972	961	954	953	948	949	956	969	978	994	1000	1008	1011	1005	
40	922	912	900	890	878	878	877	878	883	894	906	921	931	937	935	935	
45	846	838	826	816	802	798	799	807	813	822	832	846	857	863	861	857	
50	760	742	729	713	698	691	691	691	703	717	736	755	771	785	787	776	
55	652	652	634	619	605	597	591	599	609	625	636	650	664	674	679	670	
60	553	543	524	499	486	481	481	479	492	509	528	541	562	578	574	569	
65	441	424	404	386	369	366	364	364	376	397	411	431	450	466	464	456	
70	325	312	295	273	259	254	250	256	266	282	301	314	334	347	351	339	
75	216	203	192	170	161	156	154	157	166	177	193	205	222	232	232	228	
80	124	115	103	90.9	80.2	74.5	72.9	77.5	85.6	95.1	106	117	128	134	136	133	
85	52.8	45.9	36.6	29.7	23.6	20.5	19.9	21.3	26.6	32.2	40.0	48.7	57.6	62.8	62.5	58.3	
90	10.9	9.57	8.10	7.17	6.66	6.58	6.65	6.65	6.88	7.75	9.31	10.1	12.2	13.7	13.6	12.3	
95	6.35	6.11	5.98	6.10	6.01	6.00	6.10	6.15	6.06	6.04	5.93	6.01	6.12	6.24	6.40	6.45	
100	5.64	6.55	6.70	7.94	9.58	9.78	10.3	10.0	9.03	8.08	6.59	6.03	5.64	5.52	5.61	5.63	
105	10.8	10.8	9.74	8.97	8.62	7.65	7.69	7.94	8.30	9.32	9.96	10.8	10.6	10.3	10.9	10.6	
110	6.27	5.81	5.04	4.98	4.70	4.26	4.34	4.59	4.40	4.92	5.33	5.74	5.96	6.44	6.89	6.47	
115	3.89	3.56	3.40	3.24	3.06	3.05	3.03	3.17	2.68	2.78	3.01	3.13	3.29	3.49	3.69	3.79	
120	2.86	2.84	2.93	2.94	3.02	3.09	3.10	3.13	2.58	2.51	2.47	2.43	2.44	2.46	2.43	2.50	
125	2.99	3.03	3.11	3.19	3.28	3.35	3.37	3.37	2.73	2.68	2.61	2.54	2.53	2.52	2.52	2.52	
130	3.15	3.22	3.28	3.37	3.45	3.51	3.55	3.54	2.94	2.89	2.81	2.76	2.74	2.73	2.70	2.71	
135	3.36	3.41	3.49	3.58	3.64	3.70	3.74	3.73	3.21	3.18	3.12	3.05	3.02	3.01	2.99	2.99	
140	3.58	3.64	3.70	3.77	3.84	3.89	3.92	3.94	3.49	3.46	3.39	3.33	3.31	3.30	3.29	3.29	
145	3.75	3.80	3.86	3.92	3.97	4.05	4.06	4.07	3.77	3.76	3.73	3.66	3.62	3.58	3.59	3.59	
150	3.99	4.03	4.09	4.14	4.22	4.27	4.30	4.29	4.10	4.07	4.06	3.99	3.94	3.91	3.90	3.90	
155	4.10	4.17	4.23	4.28	4.31	4.38	4.41	4.44	4.13	4.12	4.11	4.06	4.00	3.96	3.97	3.98	
160	4.15	4.19	4.25	4.29	4.32	4.38	4.42	4.44	3.84	3.85	3.85	3.83	3.77	3.77	3.73	3.71	
165	4.20	4.25	4.30	4.32	4.35	4.43	4.47	4.47	3.82	3.83	3.83	3.79	3.74	3.69	3.70	3.69	
170	4.58	4.62	4.66	4.68	4.75	4.81	4.85	4.82	4.63	4.64	4.65	4.62	4.58	4.57	4.58	4.56	
175	5.06	5.06	5.09	5.10	5.16	5.20	5.22	5.22	5.21	5.22	5.22	5.17	5.13	5.15	5.19	5.21	
180	5.07	5.06	5.13	5.13	5.18	5.24	5.19	5.23	5.04	5.07	5.08	5.11	5.13	5.16	5.19	5.20	

**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	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	2018-07-04	2019-07-03
ST-R-333	Power Meter for Integrating Sphere	2018-06-28	2019-06-27
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp	2018-07-04	2019-07-03
ST-R-358	Power Meter for Goniophotometer	2018-06-28	2019-06-27
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 \*\*\*\*\***