LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN, LLC

(Brand Name: N/A)

188 S.Northwest Highway, Cary, IL60013, USA

LED Luminaires

Model name(s): LED-8145M50-A

Representative (Tested) Model: LED-8145M50-A

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

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: May.18,2018

Review By:

Univ Xie

Manager: Univ Xie

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 NVLAP, NIST, or any agency of the Federal Government.

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN, LLC	
Brand Name	N/A	
Model Number	LED-8145M50-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120 -277Vac, 50/60 Hz	
Nominal Power	45W	
Rated Initial Lamp Lumen	--	
Declared CCT	5000K	
LED Manufacturer	SAMSUNG ELECTRONICS CO., LTD	
LED Model	SPMWH1228FD5WAR0SE	
Sample Number	GZE1801030-H-P1	
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	May.01,2018
Date of Test	May.02,2018
Test item	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	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
Reference Work Instruction	QD25

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 °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.

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 ºC ±1 ºC. 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 ºC ±1 ºC. 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

(Refer to Work Instruction QD25)

Test date	2018-05-02	Test Ambient:	25.2 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8145M50-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103 0-H-P1	120.0	60	0.3881	45.55	0.9781	7.86
	277.0	60	0.1784	45.78	0.9266	13.58

Chromaticity Measurement - Sphere-Spectroradiometer Method:

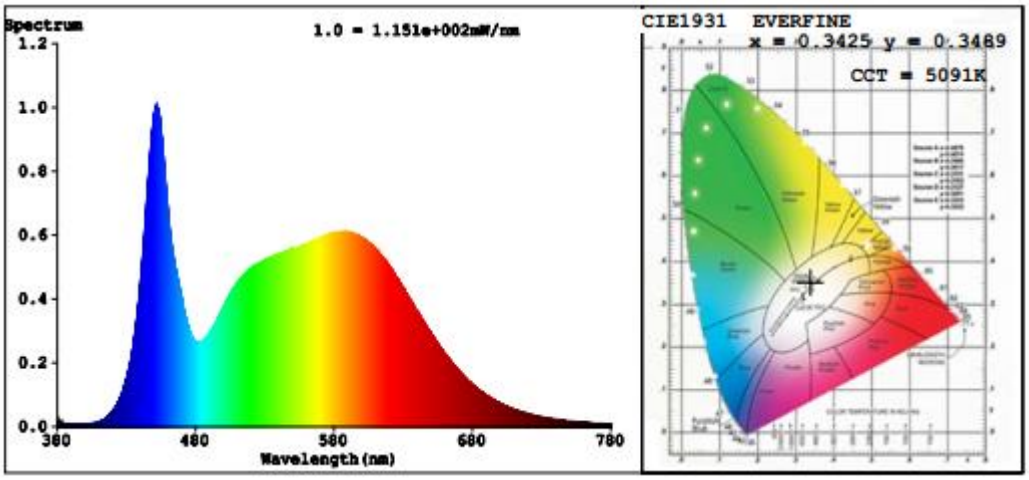
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5091
Duv	-0.0003
Chromaticity (x, y)	x=0.3425 y=0.3489
Chromaticity (u', v')	u'=0.2107 v'=0.4829
Color Rendering Index (CRI)	85.1
R9	17

Special Color Rendering Indices			
R1	84	R9	17
R2	90	R10	76
R3	93	R11	85
R4	85	R12	66
R5	85	R13	86
R6	86	R14	97
R7	87	R15	80
R8	70	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	5485.6	5494.0
Luminous Efficacy (lm/W)	120.43	120.01
Most worst Luminous/Highest Watts	119.83	
Beam Angle ( )	323.9	--
Center Beam Candle Power (cd)	3	--

Spectral Power Distribution & Chromaticity Diagram

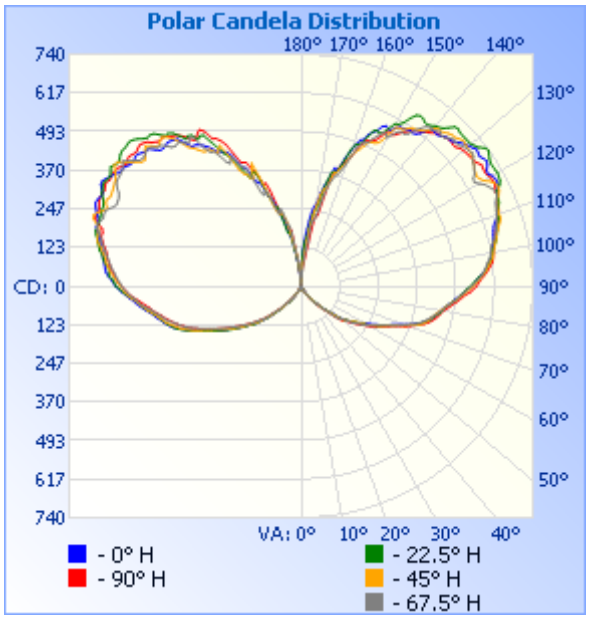


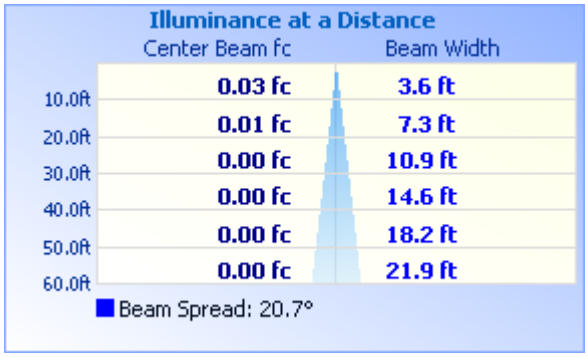
Zonal Lumen Tabulation

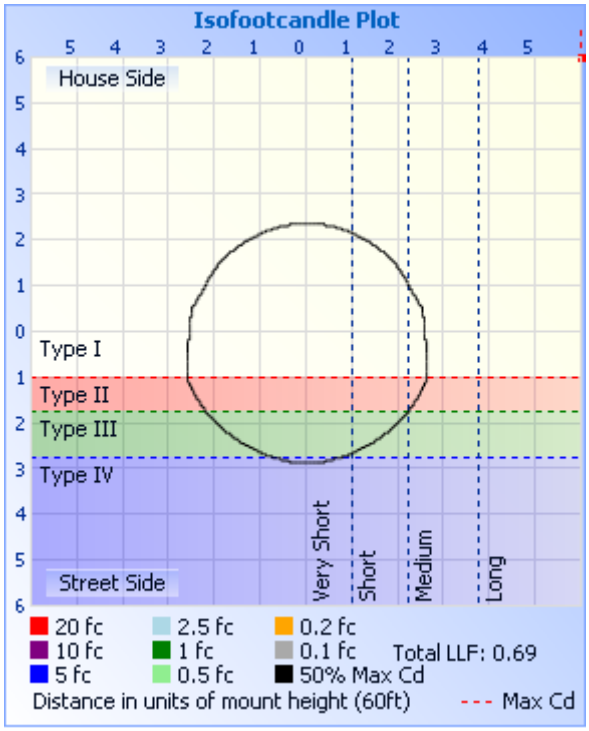
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	7.6	0.1%
0-40	35.3	0.6%
0-60	316.0	5.8%
60-90	1,333.2	24.3%
70-100	1,675.8	30.5%
90-120	2,032.3	37%
0-90	1,649.2	30.1%
90-180	3,836.6	69.9%
0-180	5,485.8	100%

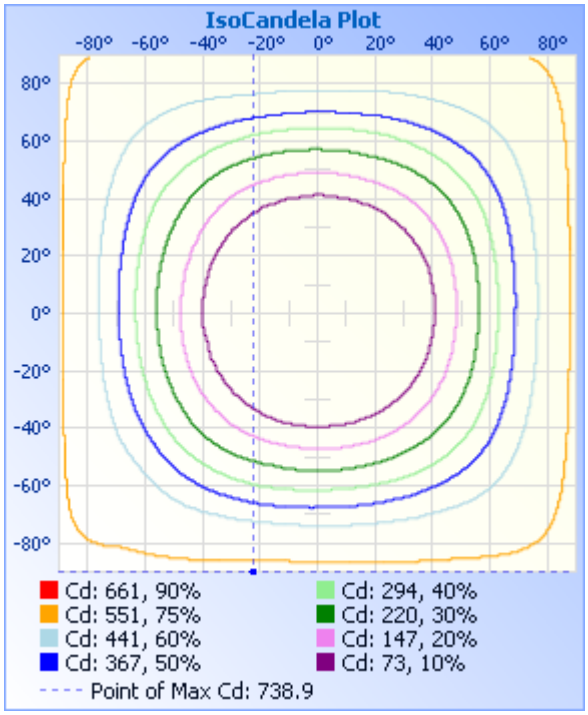
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.3	0.0%	90-100	657.9	12%
10-20	1.5	0.0%	100-110	693.8	12.6%
20-30	5.9	0.1%	110-120	680.6	12.4%
30-40	27.7	0.5%	120-130	617.6	11.3%
40-50	90.5	1.6%	130-140	510.8	9.3%
50-60	190.2	3.5%	140-150	367.5	6.7%
60-70	315.3	5.7%	150-160	215.6	3.9%
70-80	454.7	8.3%	160-170	81.9	1.5%
80-90	563.3	10.3%	170-180	10.9	0.2%

Photometric Data









Candela Table - Type 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	360
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124	715	725	667	666	694	704	699	703	680	704	708	687	687	701	676	657	715

125	710	732	674	673	686	706	694	699	673	708	691	696	680	698	675	662	710
126	704	**739**	677	678	680	709	695	699	668	714	673	681	686	691	679	668	704
127	707	734	684	689	682	707	692	701	667	717	659	667	688	685	682	677	707
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143	608	656	624	631	621	592	543	553	564	601	546	594	588	653	606	632	608
144	605	662	619	616	614	573	529	550	558	595	531	588	575	667	595	619	605
145	607	664	617	593	605	556	517	550	549	573	526	538	582	667	585	610	607
146	605	658	607	586	594	534	516	539	537	579	527	515	591	652	573	604	605
147	599	640	596	588	584	528	506	526	525	575	516	514	596	628	564	621	599
148	600	615	596	581	571	539	485	518	505	543	500	491	583	604	558	622	600
149	591	603	592	564	564	537	479	519	503	514	513	462	549	582	552	601	591
150	575	598	565	548	570	516	489	516	492	488	519	453	544	573	550	571	575
151	573	575	531	558	564	503	482	479	490	474	471	463	531	565	544	557	573
152	580	555	518	557	541	479	447	447	471	443	421	467	512	558	534	561	580
153	573	549	513	540	523	437	421	424	443	420	403	434	474	551	529	566	573
154	553	553	512	524	515	396	387	420	421	395	397	423	439	547	526	568	553
155	543	547	506	505	512	385	376	392	417	380	381	410	437	540	505	531	543
156	531	523	489	500	508	392	390	361	383	387	374	366	432	523	487	491	531

157	508	498	474	497	494	393	402	350	358	396	402	323	408	504	482	472	508
158	503	489	463	472	471	389	385	325	360	393	424	313	392	496	465	478	503
159	482	483	448	445	439	365	343	296	339	359	374	324	367	460	453	455	482
160	458	464	419	412	425	331	315	284	305	312	323	323	344	418	426	412	458
161	434	425	404	389	415	290	281	266	302	286	281	296	348	399	398	404	434
162	399	398	392	374	403	283	266	253	281	264	252	260	320	417	375	394	399
163	383	381	377	365	380	277	256	261	255	266	244	243	276	377	362	368	383
164	393	381	375	351	375	237	216	229	235	248	240	246	247	368	369	348	393
165	372	376	337	332	345	207	171	208	224	210	241	257	234	384	359	346	372
166	344	345	316	300	276	162	138	186	191	178	231	242	227	370	343	341	344
167	329	319	319	260	232	121	121	174	173	175	220	214	212	334	322	319	329
168	304	274	298	231	229	79	98	158	166	177	197	198	189	295	291	302	304
169	275	250	267	215	216	71	79	120	147	151	166	196	189	260	263	268	275
170	263	243	244	214	175	60	79	98	121	118	138	171	179	243	265	254	263
171	254	228	213	190	134	43	65	73	102	105	119	123	125	240	256	253	254
172	236	198	183	137	106	38	53	58	83	87	104	97	96	224	235	248	236
173	212	171	145	116	86	22	34	49	63	62	90	89	68	206	212	244	212
174	183	154	110	93	72	10	23	34	38	51	64	62	54	184	193	210	183
175	166	146	96	81	82	10	12	22	23	35	41	37	38	164	174	191	166
176	142	132	74	46	66	5	6	11	10	12	15	21	22	142	145	169	142
177	116	110	65	49	44	5	5	6	6	7	7	7	9	116	133	143	116
178	85	89	55	45	18	13	12	15	15	15	10	5	5	91	106	106	85
179	83	70	52	30	9	30	34	38	46	30	19	7	6	66	61	91	83
180	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06
Expand Uncertainty: Photometric Measurement (Sphere):2.04%, k=2 Chromaticity Measurement(Sphere):28.8K, k=2 Photometric Measurement(Goniophotometer):2.36%, k=2			

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