

LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN, LLC

(Brand Name: LIGHT EFFICIENT DESIGN)

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

Model name(s): LED-8236M40

Report Type: Testing and Report According to IES LM-79-2008

**Type of
Luminaire:** LED Luminaires

Report Date: 2019-03-13
Ningbo TengLi Testing Co., Ltd

Prepared By: 2nd floor, Block B, Ningbo Testing and Certification Base,
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Test & Report By:

Xeon Ren

Engineer:

Review By:

Johnson Sun

Manager:

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:		
Model Number	LED-8236M40	
Remark	N/A	
Representative (Tested) Model	LED-8236M40	
Model Difference	N/A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
LED Manufacturer	SAMSUNG	
LED Model	SPMWHT228FD5WAT☆S3	
Dimming	Non-dimmable	
Sample Number	JBE181108-H-AH1	
Date of Receipt	Mar.05,2019	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

1.2 Rated Values:	
Rated Voltage / Frequency	120-277Vac, 50/60Hz
Nominal Power	95W
Rated Initial Lamp Lumen	--
Declared CCT	4000K

1.3 Test Specifications:

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 C78.377-2015 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

1.4 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.

2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2019-03-11	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8236M40		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE181108-	120.0	60	0.8196	95.67	0.9727	11.07
H-AH1	277.0	60	0.3737	95.43	0.9220	16.58

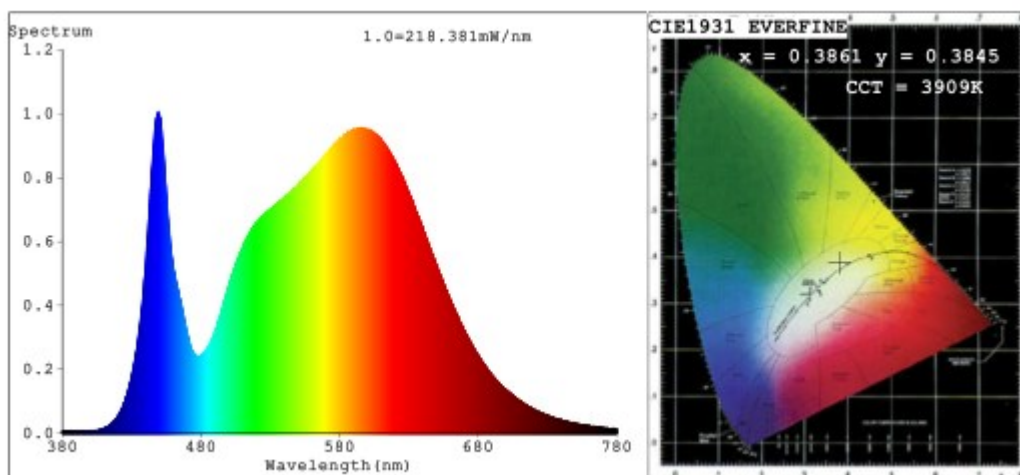
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	13
Frequency (Hz)	60	R2	88	R10	72
CCT (K)	3909	R3	94	R11	83
Duv	0.0020	R4	84	R12	63
Chromaticity (x, y)	x=0.3861 y=0.3845	R5	82	R13	83
Chromaticity (u', v')	u'=0.2257 v'=0.5058	R6	84	R14	96
Color Rendering Index (CRI)	83.4	R7	87	R15	76
R9	13	R8	67	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	13011	13022
Luminous Efficacy (lm/W)	136.00	136.46
Beam Angle (°)	113.0	--
Center Beam Candle Power (cd)	4464	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	3,515.3	27%
0-40	5,802.4	44.6%
0-60	10,265.8	78.9%
60-90	2,621.8	20.2%
70-100	1,157.1	8.9%
90-120	98.5	0.8%
0-90	12,887.7	99.1%
90-180	121.8	0.9%
0-180	13,009.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	423.2	3.3%	90-100	52.5	0.4%
10-20	1,219.4	9.4%	100-110	34.5	0.3%
20-30	1,872.7	14.4%	110-120	11.5	0.1%
30-40	2,287.1	17.6%	120-130	5.3	0%
40-50	2,372.1	18.2%	130-140	5.1	0%
50-60	2,091.3	16.1%	140-150	5.0	0%
60-70	1,517.2	11.7%	150-160	4.1	0%
70-80	832.9	6.4%	160-170	2.7	0%
80-90	271.8	2.1%	170-180	1.1	0%

Photometric Data

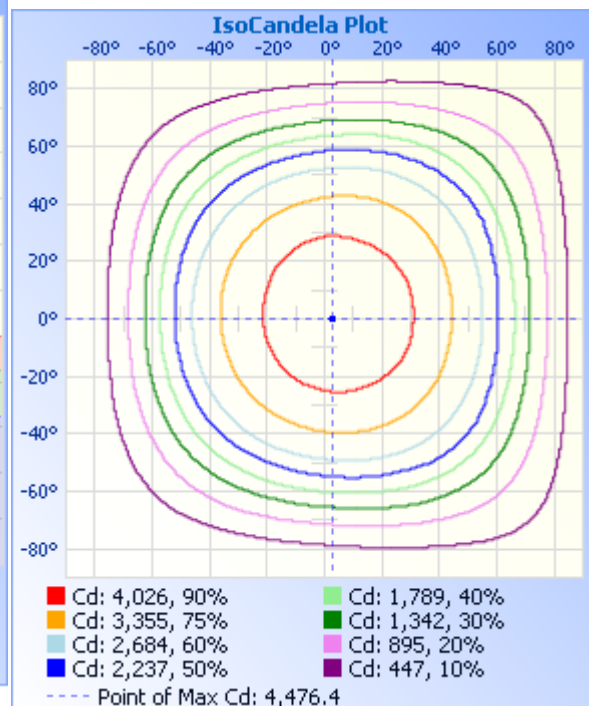
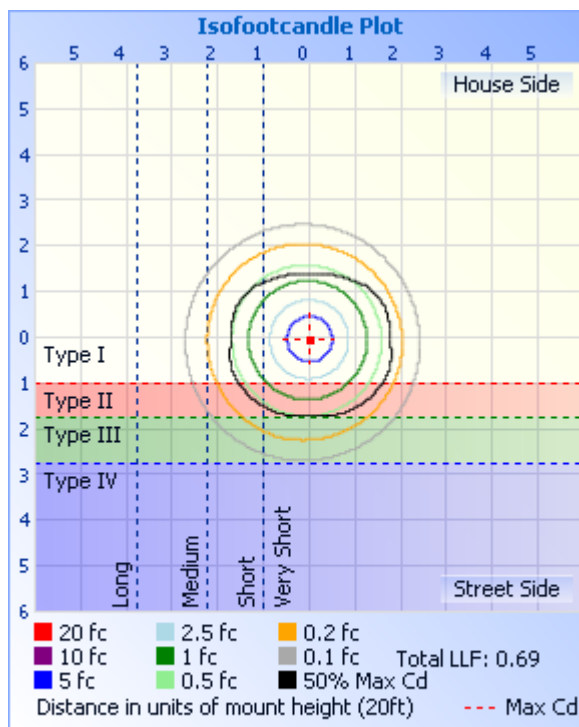
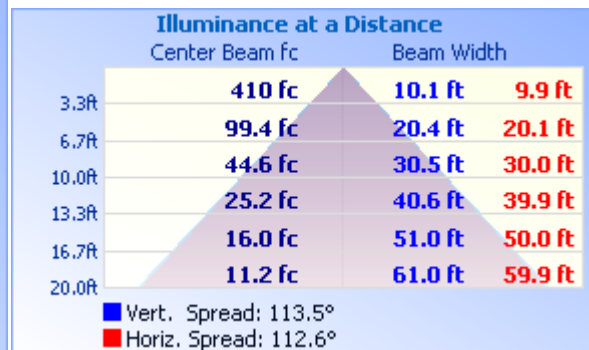
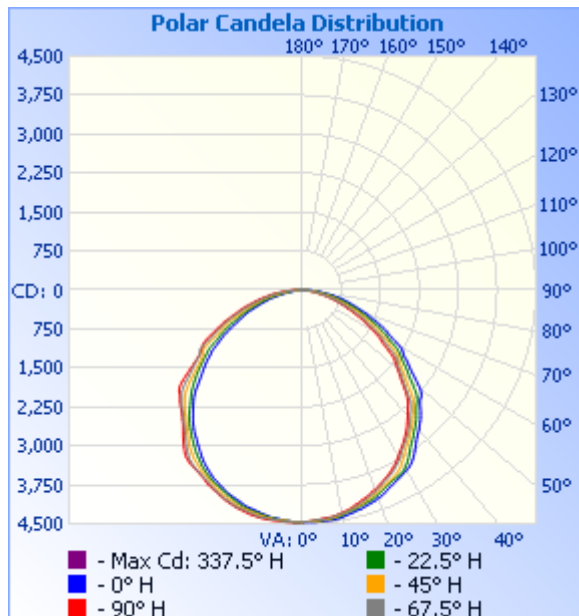


Table--1

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	4464	4464	4464	4464	4464	4464	4464	4464	4464	4464	4464	4464	4464	4464	4464	4464			
5	4470	4459	4476	4472	4464	4448	4442	4427	4418	4408	4423	4440	4440	4444	4450	4458			
10	4460	4456	4463	4467	4435	4401	4376	4369	4352	4331	4341	4358	4380	4396	4419	4444			
15	4406	4412	4404	4396	4359	4303	4284	4259	4229	4209	4225	4255	4293	4325	4355	4382			
20	4311	4327	4320	4289	4262	4199	4157	4116	4081	4072	4082	4117	4170	4197	4252	4295			
25	4182	4196	4208	4172	4125	4060	4026	3953	3917	3907	3934	3969	4017	4068	4107	4158			
30	4038	4052	4041	4022	4006	3949	3833	3743	3696	3663	3670	3765	3813	3892	3955	4022			
35	3915	3920	3890	3879	3773	3640	3549	3485	3439	3395	3428	3483	3548	3646	3759	3853			
40	3586	3626	3623	3624	3493	3384	3298	3224	3150	3120	3124	3184	3290	3386	3468	3529			
45	3302	3346	3358	3331	3212	3109	3028	2897	2831	2761	2786	2831	2969	3060	3212	3274			
50	3096	3111	3087	2996	2963	2739	2559	2458	2407	2342	2358	2465	2545	2723	2896	3039			
55	2643	2673	2658	2641	2492	2344	2253	2150	2020	1940	1968	2037	2174	2334	2421	2574			
60	2238	2293	2297	2283	2173	1954	1810	1710	1592	1538	1531	1655	1769	1906	2152	2283			
65	1868	1864	1872	1845	1715	1554	1394	1290	1163	1133	1174	1248	1325	1502	1669	1786			
70	1432	1471	1472	1404	1297	1157	1021	889	816	789	831	878	959	1110	1247	1359			
75	1049	1092	1047	1002	923	796	681	581	504	482	501	565	653	752	871	974			
80	708	731	731	688	596	485	366	295	254	228	236	279	343	429	562	657			
85	400	443	416	367	308	221	160	101	66.4	59.3	70.8	108	149	198	279	343			
90	177	191	188	162	103	47.7	40.6	37.5	36.9	36.9	38.4	40.8	42.0	55.2	110	153			
95	43.2	43.2	45.7	43.7	37.9	34.9	36.0	37.6	38.8	37.4	38.7	37.2	35.6	36.7	42.3	42.4			
100	35.4	34.8	36.4	37.2	38.6	37.2	30.8	31.0	34.9	37.5	37.0	32.0	31.6	37.4	37.5	37.8			
105	35.1	34.4	33.9	31.5	31.3	42.1	39.4	26.8	22.1	21.3	21.2	28.9	40.6	43.8	33.2	32.9			
110	43.1	42.9	46.5	39.7	29.5	18.4	14.6	11.5	8.66	9.22	9.55	11.1	12.7	18.9	27.0	40.5			
115	14.8	15.5	12.2	10.6	11.1	9.43	8.20	7.06	6.31	6.92	6.77	7.26	6.97	7.74	9.42	12.9			
120	8.39	7.90	7.17	6.98	7.00	6.50	6.10	5.94	5.70	6.01	5.86	5.73	5.51	5.51	5.98	6.94			
125	5.81	5.44	5.48	5.62	5.49	5.76	5.77	5.99	5.97	6.28	6.19	5.95	5.60	5.32	5.23	5.20			
130	5.59	5.25	5.27	5.40	5.67	5.97	6.39	6.58	6.70	6.81	6.75	6.68	6.36	5.98	5.75	5.53			
135	6.02	5.90	5.77	5.94	6.38	6.49	6.83	6.94	7.02	7.14	7.02	6.93	6.76	6.55	6.32	6.18			
140	6.77	6.70	6.50	6.81	6.92	7.28	7.43	7.70	7.67	7.76	7.67	7.58	7.44	7.17	6.92	6.72			
145	7.61	7.52	7.45	7.68	7.82	8.06	8.24	8.52	8.40	8.54	8.51	8.39	8.20	7.96	7.73	7.57			
150	8.31	8.24	8.23	8.38	8.55	8.77	9.04	9.14	8.99	9.02	9.10	8.99	8.77	8.61	8.47	8.33			
155	8.85	8.73	8.67	9.06	9.07	9.15	9.45	9.47	9.04	9.05	9.07	9.01	8.80	8.80	8.71	8.57			
160	9.18	9.05	9.07	9.12	9.34	9.45	9.53	9.69	9.04	9.05	9.10	9.09	8.83	8.83	8.71	8.68			
165	9.39	9.35	9.40	9.50	9.64	9.69	9.88	9.99	9.26	9.24	9.32	9.31	9.21	9.05	8.96	8.88			
170	10.6	10.6	10.6	10.7	10.7	10.8	11.2	11.3	10.8	10.8	10.8	10.8	10.6	10.5	10.5	10.4			
175	11.9	12.0	12.1	12.2	12.2	12.1	12.0	12.0	11.9	11.9	11.8	11.9	11.9	12.0	11.9	11.9			
180	12.0	11.8	11.7	11.8	11.8	11.8	12.0	12.1	11.5	11.6	11.6	11.6	11.6	11.6	11.6	11.6			

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-702	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-701	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-705	Standard Lamp	2019-02-07	2020-02-06
ST-R-704	Power Meter for Integrating Sphere	2019-01-06	2020-01-05
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	Standard Lamp	2019-02-12	2020-02-11
ST-R-711	Power Meter for Goniophotometer	2019-01-06	2020-01-05
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

4. Product Photo



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