

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-8236M30C

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:

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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-8236M30C	
Remark	N/A	
Representative (Tested) Model	LED-8236M30C	
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	SPMWHT228FD5WAU☆S3	
Dimming	Non-dimmable	
Sample Number	JBE181108-H-AJ1	
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	220-347Vac, 50/60Hz
Nominal Power	95W
Rated Initial Lamp Lumen	--
Declared CCT	3000K

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	2019-03-10	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8236M30C		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE181108-	277.0	60	0.3694	99.01	0.9675	14.03
H-AJ1	347.0	60	0.3055	99.45	0.9382	17.78

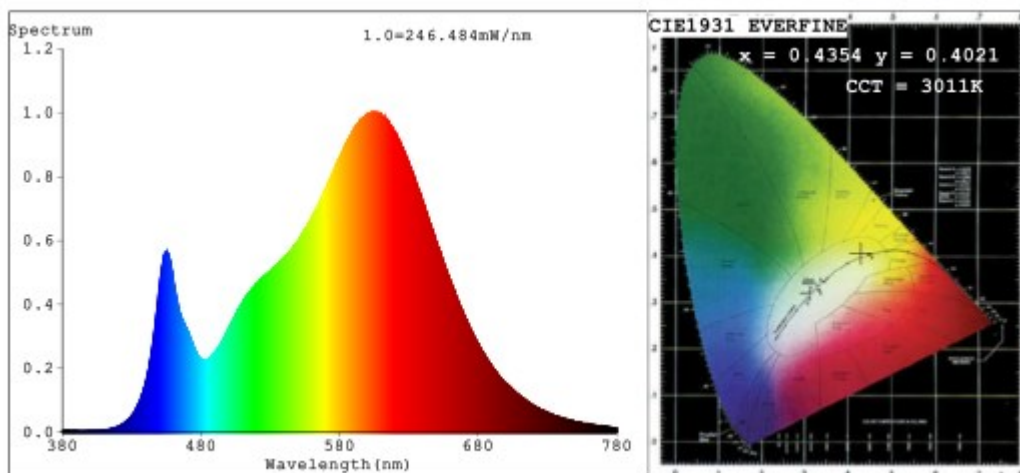
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	83	R9	13
Frequency (Hz)	60	R2	93	R10	85
CCT (K)	3011	R3	95	R11	81
Duv	-0.0006	R4	81	R12	73
Chromaticity (x, y)	x=0.4354 y=0.4021	R5	83	R13	86
Chromaticity (u', v')	u'=0.2504 v'=0.5204	R6	82	R14	98
Color Rendering Index (CRI)	83.9	R7	82	R15	76
R9	13	R8	61	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	12751	12665
Luminous Efficacy (lm/W)	128.78	127.35
Beam Angle (°)	112.1	--
Center Beam Candle Power (cd)	4446	--

Spectral Power Distribution & Chromaticity Diagram

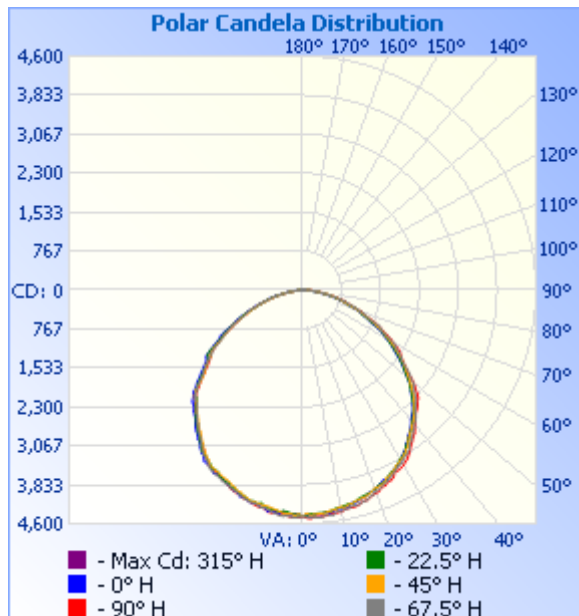


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	3,484.8	27.3%
0-40	5,735.6	45%
0-60	10,135.9	79.5%
60-90	2,499.8	19.6%
70-100	1,067.0	8.4%
90-120	85.9	0.7%
0-90	12,635.7	99.1%
90-180	114.4	0.9%
0-180	12,750.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	420.1	3.3%	90-100	42.2	0.3%
10-20	1,208.4	9.5%	100-110	33.1	0.3%
20-30	1,856.3	14.6%	110-120	10.6	0.1%
30-40	2,250.8	17.7%	120-130	6.3	0%
40-50	2,346.2	18.4%	130-140	6.4	0.1%
50-60	2,054.1	16.1%	140-150	6.3	0%
60-70	1,475.0	11.6%	150-160	5.0	0%
70-80	794.5	6.2%	160-170	3.2	0%
80-90	230.3	1.8%	170-180	1.4	0%

Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
3.3ft	408 fc	9.8 ft	9.8 ft
6.7ft	99.0 fc	19.8 ft	20.0 ft
10.0ft	44.5 fc	29.6 ft	29.8 ft
13.3ft	25.1 fc	39.4 ft	39.6 ft
16.7ft	15.9 fc	49.5 ft	49.7 ft
20.0ft	11.1 fc	59.2 ft	59.6 ft

■ Vert. Spread: 111.9°
■ Horiz. Spread: 112.2°

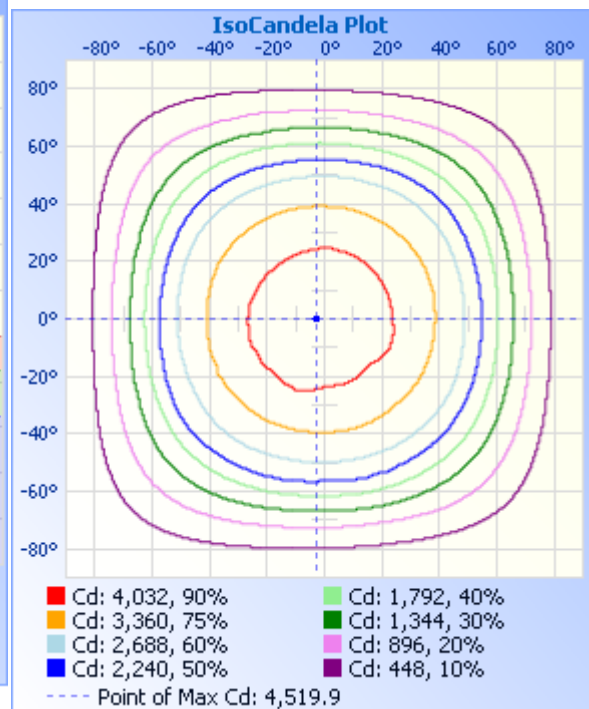
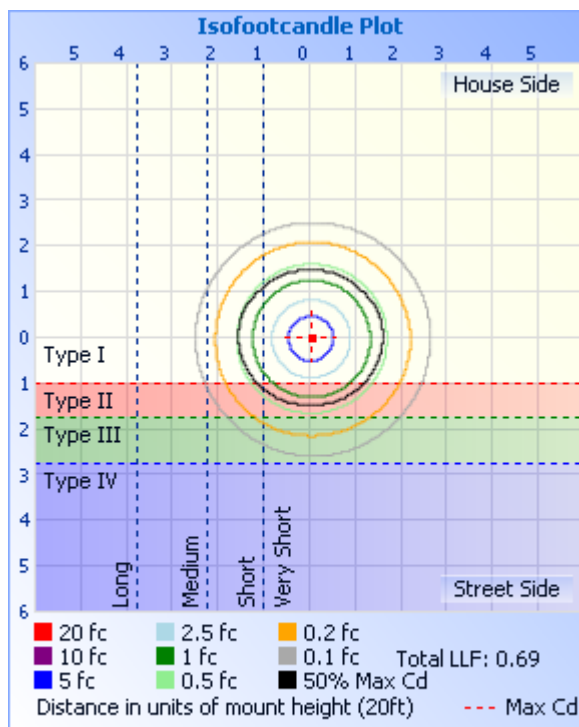


Table--1

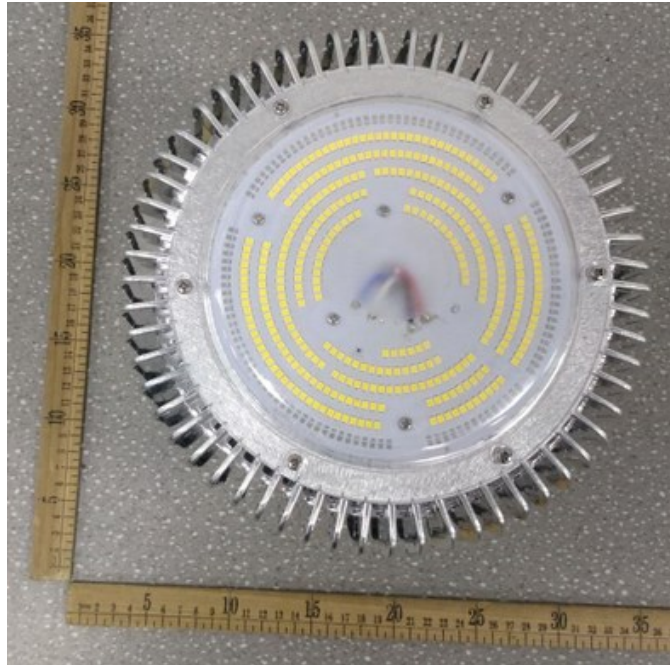
UNIT: cd

C (DEG) Y (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	4446	4446	4446	4446	4446	4446	4446	4446	4446	4446	4446	4446	4446	4446	4446	4446			
5	4422	4431	4387	4416	4424	4404	4411	4482	4471	4428	4431	4405	4366	4359	4402	4464			
10	4354	4409	4372	4329	4365	4341	4327	4414	4429	4411	4370	4393	4353	4313	4304	4350			
15	4267	4290	4289	4282	4283	4253	4276	4355	4358	4317	4315	4268	4267	4244	4233	4271			
20	4153	4139	4142	4165	4169	4163	4150	4222	4253	4185	4200	4169	4129	4126	4076	4142			
25	3996	3971	3979	4012	4040	4024	4036	4078	4127	4070	4050	4048	3995	3944	3950	4021			
30	3806	3820	3803	3820	3868	3837	3861	3925	3979	3968	3926	3914	3883	3795	3789	3819			
35	3536	3533	3554	3583	3608	3624	3638	3686	3719	3661	3636	3555	3587	3547	3488	3519			
40	3269	3264	3290	3312	3330	3367	3383	3432	3442	3358	3365	3331	3293	3269	3218	3236			
45	2975	3015	2978	2985	3086	3066	3111	3158	3209	3153	3147	3112	3072	2972	3018	2998			
50	2522	2551	2612	2649	2698	2709	2751	2860	2865	2767	2709	2668	2633	2578	2531	2567			
55	2209	2188	2236	2284	2307	2327	2392	2385	2405	2357	2361	2405	2322	2271	2215	2187			
60	1806	1804	1823	1867	1912	1939	1996	2064	2051	2048	1925	1898	1892	1832	1780	1793			
65	1368	1410	1430	1485	1483	1515	1586	1656	1639	1572	1511	1489	1453	1417	1386	1376			
70	1006	1020	1047	1073	1136	1181	1179	1210	1228	1189	1151	1110	1037	994	1007	1037			
75	652	669	687	739	774	797	805	857	873	840	803	758	715	692	663	667			
80	346	356	390	408	444	482	511	518	529	527	488	442	392	372	355	344			
85	142	152	169	191	212	233	246	262	257	245	229	208	182	159	139	139			
90	35.7	39.4	40.6	44.6	54.0	72.3	85.7	92.5	91.1	75.1	55.7	45.6	41.1	37.3	34.4	35.0			
95	32.9	32.1	33.1	34.4	35.8	37.8	40.9	41.8	42.5	43.0	40.4	37.3	36.1	32.5	31.5	31.6			
100	26.4	28.8	32.1	33.7	35.7	36.2	37.5	37.0	39.0	40.3	39.7	36.7	33.4	29.2	27.6	27.7			
105	29.9	33.5	34.1	35.4	35.8	34.6	31.1	30.5	34.0	39.7	45.7	43.3	42.7	44.3	36.3	34.9			
110	12.2	11.2	14.5	15.9	19.2	20.1	24.2	27.6	28.7	23.0	25.0	21.5	17.6	16.7	14.0	14.0			
115	7.19	7.13	8.07	8.87	9.74	8.73	8.24	10.1	11.2	10.7	12.6	12.1	10.3	9.31	7.86	8.11			
120	5.97	5.92	6.27	6.79	7.21	6.19	6.10	6.79	7.89	7.66	8.93	9.30	7.96	7.27	6.85	7.16			
125	6.08	5.92	6.03	6.16	6.34	5.71	5.80	6.04	7.34	7.34	7.85	8.08	7.83	7.48	7.23	7.54			
130	7.12	7.01	6.92	6.89	6.83	6.48	6.39	6.42	8.06	8.16	8.39	8.60	8.51	8.48	8.25	8.53			
135	7.83	7.77	7.76	7.67	7.42	7.24	7.20	7.40	8.71	8.68	8.96	9.16	8.94	8.88	8.85	9.18			
140	9.03	8.76	8.71	8.51	8.43	8.15	8.12	8.36	9.51	9.41	9.59	9.76	9.76	9.72	9.71	10.00			
145	10.1	9.90	9.77	9.81	9.59	9.39	9.33	9.42	10.4	10.3	10.4	10.6	10.6	10.5	10.6	10.8			
150	10.7	10.5	10.5	10.5	10.3	10.2	10.2	10.4	11.2	11.1	11.2	11.3	11.3	11.4	11.4	11.6			
155	10.4	10.4	10.3	10.2	10.1	10.0	10.1	10.2	11.5	11.4	11.4	11.6	11.5	11.5	11.5	11.8			
160	9.81	9.77	9.75	9.68	9.54	9.45	9.52	9.59	11.5	11.5	11.5	11.6	11.6	11.5	11.6	11.8			
165	10.00	9.90	9.83	9.87	9.78	9.63	9.60	9.75	12.0	11.9	11.9	11.9	12.0	11.8	11.9	12.1			
170	13.0	12.9	12.8	12.8	12.7	12.6	12.6	12.9	13.6	13.5	13.5	13.4	13.6	13.6	13.6	13.6			
175	15.2	15.1	15.0	15.1	15.0	15.0	14.9	15.3	15.2	15.1	14.9	14.9	15.0	14.8	14.9	15.1			
180	14.8	14.7	14.7	14.8	14.9	14.7	14.8	15.1	14.5	14.6	14.4	14.5	14.5	14.3	14.4	14.6			

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** *****