

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-8236M30

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-8236M30	
Remark	N/A	
Representative (Tested) Model	LED-8236M30	
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-AG1	
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	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-8236M30		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE181108-	120.0	60	0.8020	95.02	0.9873	10.45
H-AG1	277.0	60	0.3838	94.90	0.8927	16.63

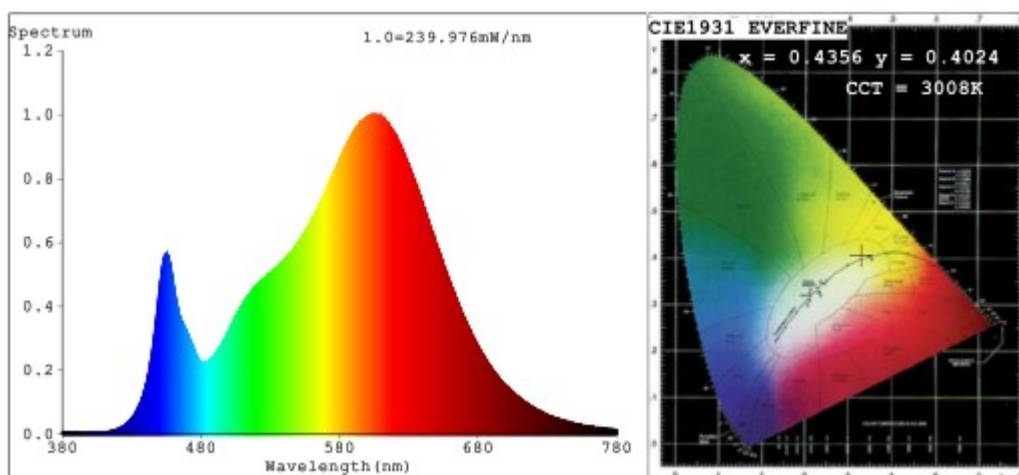
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	13
Frequency (Hz)	60	R2	93	R10	85
CCT (K)	3008	R3	95	R11	81
Duv	-0.0005	R4	81	R12	73
Chromaticity (x, y)	x=0.4356 y=0.4024	R5	83	R13	86
Chromaticity (u', v')	u'=0.2505 v'=0.5205	R6	92	R14	98
Color Rendering Index (CRI)	84.0	R7	83	R15	76
R9	13	R8	61	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	12436	12381
Luminous Efficacy (lm/W)	130.88	130.46
Beam Angle (°)	112.6	--
Center Beam Candle Power (cd)	4326	--

Spectral Power Distribution & Chromaticity Diagram

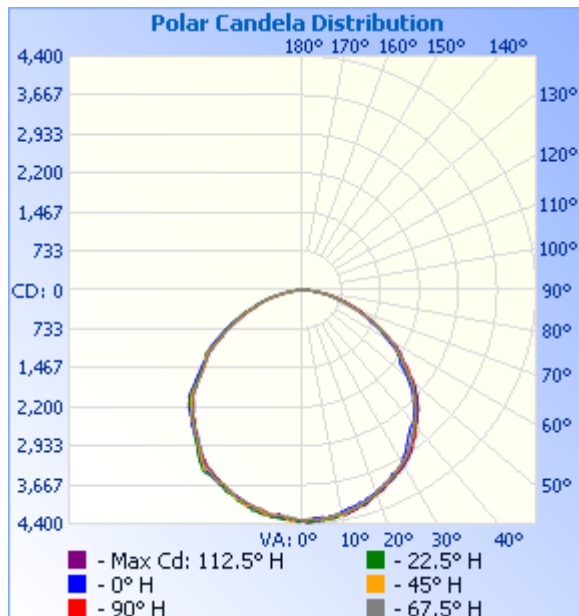


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	3,394.8	27.3%
0-40	5,590.9	45%
0-60	9,888.4	79.5%
60-90	2,438.8	19.6%
70-100	1,035.7	8.3%
90-120	80.2	0.6%
0-90	12,327.2	99.1%
90-180	107.6	0.9%
0-180	12,434.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	409.7	3.3%	90-100	37.5	0.3%
10-20	1,178.2	9.5%	100-110	32.9	0.3%
20-30	1,806.9	14.5%	110-120	9.7	0.1%
30-40	2,196.0	17.7%	120-130	5.9	0%
40-50	2,291.0	18.4%	130-140	6.2	0%
50-60	2,006.5	16.1%	140-150	6.1	0%
60-70	1,440.6	11.6%	150-160	4.9	0%
70-80	776.9	6.2%	160-170	3.1	0%
80-90	221.2	1.8%	170-180	1.3	0%

Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
3.3ft	397 fc	9.8 ft	9.8 ft
6.7ft	96.4 fc	19.9 ft	20.0 ft
10.0ft	43.3 fc	29.7 ft	29.8 ft
13.3ft	24.5 fc	39.5 ft	39.6 ft
16.7ft	15.5 fc	49.6 ft	49.7 ft
20.0ft	10.8 fc	59.4 ft	59.6 ft

■ Vert. Spread: 112.1°
■ Horiz. Spread: 112.2°

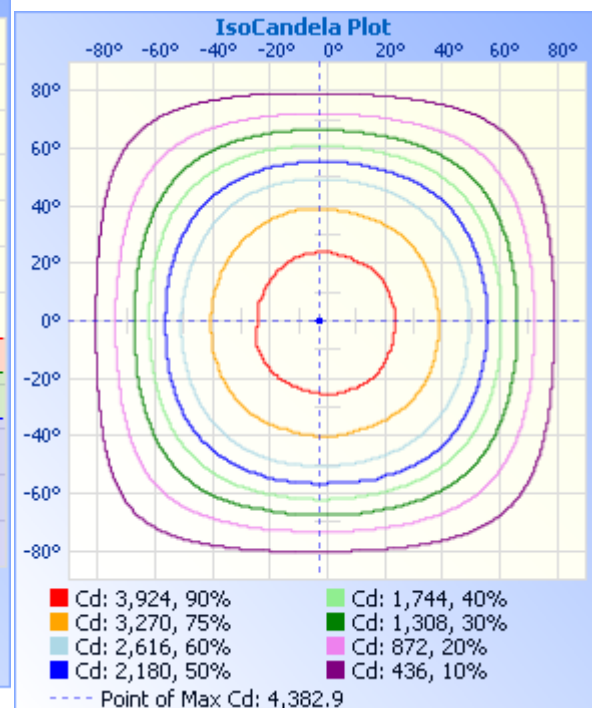
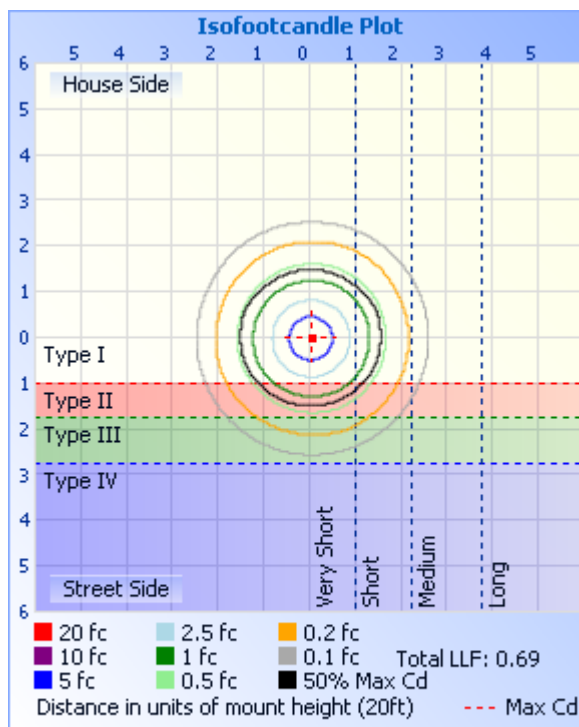


Table--1

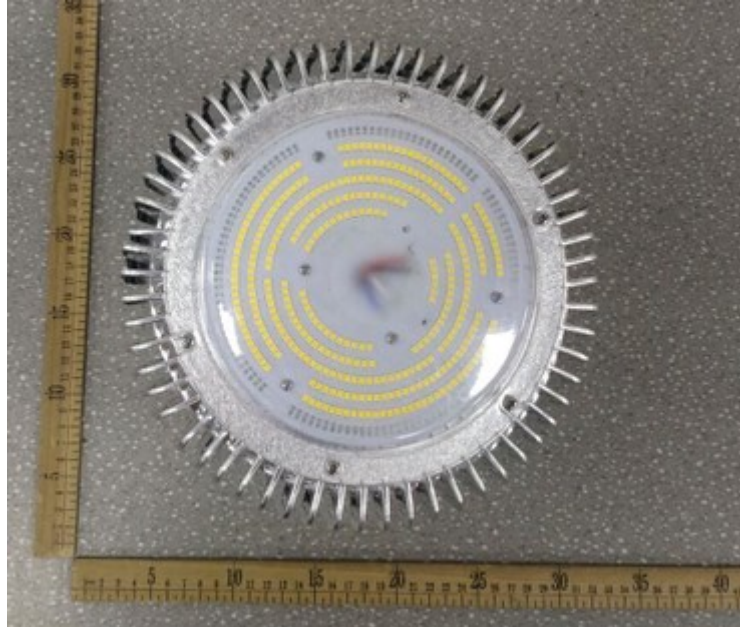
UNIT: cd

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	4326	4326	4326	4326	4326	4326	4326	4326	4326	4326	4326	4326	4326	4326	4326	4326			
5	4312	4273	4299	4311	4286	4360	4317	4305	4327	4298	4315	4277	4308	4329	4249	4281			
10	4215	4251	4236	4217	4241	4296	4301	4269	4287	4274	4280	4286	4271	4287	4253	4210			
15	4144	4159	4172	4143	4139	4196	4199	4170	4195	4208	4198	4172	4179	4191	4185	4118			
20	4007	4013	4014	4006	4053	4092	4067	4072	4085	4084	4082	4084	4038	4066	4040	4004			
25	3886	3882	3907	3859	3911	3917	3909	3923	3912	3964	3932	3928	3927	3930	3909	3905			
30	3690	3711	3704	3717	3751	3776	3762	3759	3804	3823	3822	3800	3798	3815	3761	3737			
35	3449	3429	3439	3421	3457	3544	3559	3548	3590	3605	3591	3548	3480	3498	3456	3435			
40	3172	3198	3189	3179	3243	3275	3282	3284	3329	3305	3316	3246	3272	3208	3243	3204			
45	2927	2948	2930	2916	2942	3026	2982	3008	3030	3081	3060	3020	3034	3028	2962	2903			
50	2529	2519	2496	2532	2596	2662	2684	2662	2735	2747	2732	2700	2624	2568	2512	2513			
55	2216	2184	2201	2189	2243	2265	2294	2313	2317	2285	2255	2234	2218	2234	2218	2184			
60	1732	1786	1797	1778	1834	1914	1924	1932	1939	1982	1982	1902	1881	1818	1783	1764			
65	1339	1361	1366	1384	1415	1531	1498	1541	1545	1532	1573	1555	1473	1433	1388	1378			
70	950	967	1001	1025	1063	1103	1109	1134	1180	1169	1154	1124	1059	1039	1018	960			
75	663	681	678	687	695	742	761	797	832	823	784	787	742	716	679	676			
80	354	367	366	380	409	437	454	466	521	520	482	455	425	399	384	368			
85	147	146	152	167	179	197	213	220	231	231	219	204	183	174	166	156			
90	35.7	36.3	36.9	38.6	40.7	49.1	61.2	73.3	82.3	81.0	74.6	58.8	45.3	37.3	36.3	36.3			
95	29.6	29.1	30.6	31.2	29.8	30.5	31.5	32.9	36.7	35.9	35.0	34.0	31.2	29.9	30.2	31.0			
100	25.9	26.7	28.1	28.6	31.8	31.7	32.4	32.1	32.3	32.8	32.7	31.6	32.5	30.4	29.4	28.3			
105	37.9	40.6	39.8	38.1	40.2	36.3	31.8	31.6	31.9	34.2	37.4	40.8	42.1	43.7	42.2	41.2			
110	12.1	13.0	13.1	13.5	15.7	17.5	21.0	21.6	24.1	23.8	21.5	19.6	17.6	16.0	15.5	13.0			
115	7.65	7.73	7.66	7.98	8.10	8.80	8.99	9.03	11.1	10.0	9.40	8.89	9.02	8.50	9.09	9.49			
120	6.06	6.00	5.97	6.04	6.01	6.70	6.62	6.54	7.28	7.01	6.92	6.80	7.01	6.78	7.02	7.48			
125	5.86	5.84	5.78	5.74	5.75	5.85	5.79	5.80	6.79	6.82	6.76	6.81	6.98	6.98	7.16	7.29			
130	6.96	6.93	6.81	6.78	6.52	6.56	6.42	6.42	7.65	7.56	7.56	7.71	7.94	7.96	8.20	8.22			
135	7.72	7.58	7.37	7.24	7.28	7.35	7.32	7.29	8.39	8.28	8.43	8.41	8.57	8.62	8.80	8.79			
140	8.54	8.52	8.46	8.30	8.24	8.20	8.14	8.18	9.18	9.10	9.15	9.20	9.33	9.39	9.51	9.58			
145	9.61	9.53	9.50	9.42	9.38	9.33	9.23	9.14	10.09	9.97	10.0	10.0	10.1	10.2	10.4	10.4			
150	10.4	10.4	10.4	10.1	9.96	9.99	10.1	10.1	10.8	10.7	10.8	10.7	10.9	11.0	11.1	11.1			
155	10.03	10.0	10.0	9.83	9.77	9.91	9.87	9.86	11.0	11.1	11.0	11.0	11.2	11.3	11.3	11.3			
160	9.48	9.45	9.47	9.33	9.22	9.36	9.32	9.23	11.1	11.1	11.1	11.1	11.2	11.3	11.3	11.4			
165	9.59	9.56	9.61	9.50	9.46	9.49	9.37	9.44	11.5	11.5	11.5	11.5	11.6	11.6	11.6	11.6			
170	12.6	12.7	12.4	12.4	12.4	12.4	12.3	12.2	13.1	13.1	13.1	13.0	13.1	13.1	13.2	13.2			
175	14.5	14.7	14.6	14.7	14.8	14.7	14.8	14.7	14.7	14.6	14.6	14.6	14.6	14.6	14.5	14.5			
180	14.3	14.3	14.2	14.2	14.2	14.4	14.4	14.3	14.1	14.1	14.1	14.0	14.0	14.2	14.1	14.0			

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 *******