

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-8232M30

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

**Type of
Luminaire:** LED Luminaires

Report Date: 2019-02-26
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: Xeon Ren

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

1.1 Product Information:		
Model Number	LED-8232M30	
Remark	N/A	
Representative (Tested) Model	LED-8232M30	
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-A1(3000K)	
Date of Receipt	2019-02-18	
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	140W
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	2019-02-20	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8232M30		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE181108-	120.0	60	1.204	142.6	0.9872	9.14
H-A1	277.0	60	0.5318	139.8	0.9490	12.79

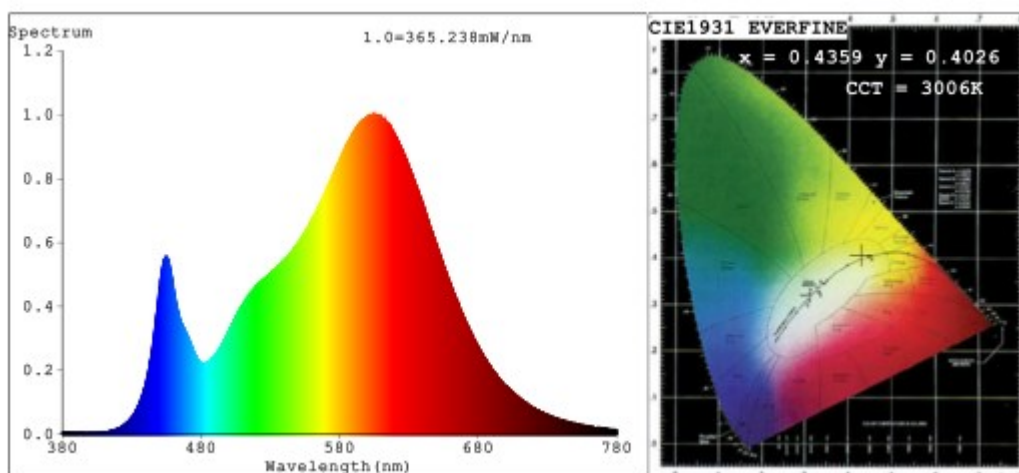
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	12
Frequency (Hz)	60	R2	93	R10	84
CCT (K)	3006	R3	95	R11	81
Duv	-0.0005	R4	81	R12	73
Chromaticity (x, y)	x=0.4359 y=0.4026	R5	83	R13	86
Chromaticity (u', v')	u'=0.2505 v'=0.5206	R6	82	R14	98
Color Rendering Index (CRI)	83.9	R7	83	R15	76
R9	12	R8	61	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	18346	18190
Luminous Efficacy (lm/W)	128.65	130.11
Beam Angle (°)	112.9	--
Center Beam Candle Power (cd)	6373	--

Spectral Power Distribution & Chromaticity Diagram

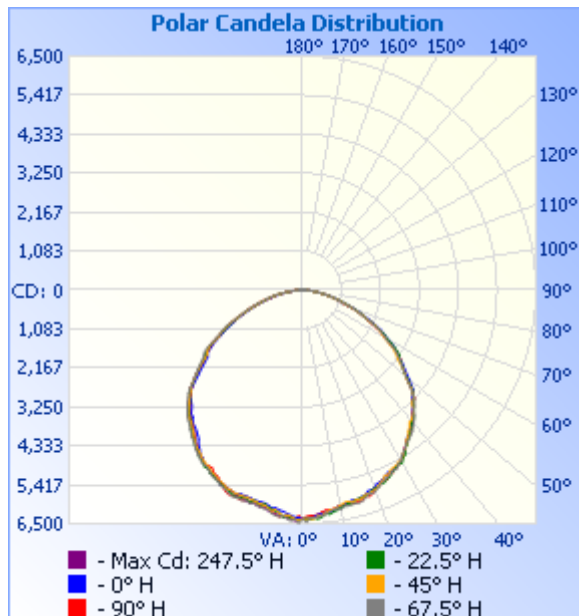


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	4,945.9	27%
0-40	8,168.5	44.5%
0-60	14,552.2	79.3%
60-90	3,617.8	19.7%
70-100	1,551.9	8.5%
90-120	139.3	0.8%
0-90	18,169.9	99%
90-180	174.6	1%
0-180	18,344.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	593.7	3.2%	90-100	78.9	0.4%
10-20	1,708.5	9.3%	100-110	48.4	0.3%
20-30	2,643.6	14.4%	110-120	12.0	0.1%
30-40	3,222.6	17.6%	120-130	7.7	0%
40-50	3,402.5	18.5%	130-140	7.8	0%
50-60	2,981.2	16.3%	140-150	7.7	0%
60-70	2,144.7	11.7%	150-160	6.3	0%
70-80	1,127.7	6.1%	160-170	4.1	0%
80-90	345.3	1.9%	170-180	1.7	0%

Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
3.3ft	585 fc	9.7 ft	9.9 ft
6.7ft	142 fc	19.8 ft	20.1 ft
10.0ft	63.7 fc	29.5 ft	30.0 ft
13.3ft	36.0 fc	39.3 ft	39.9 ft
16.7ft	22.9 fc	49.3 ft	50.1 ft
20.0ft	15.9 fc	59.1 ft	60.0 ft

■ Vert. Spread: 111.8°
■ Horiz. Spread: 112.6°

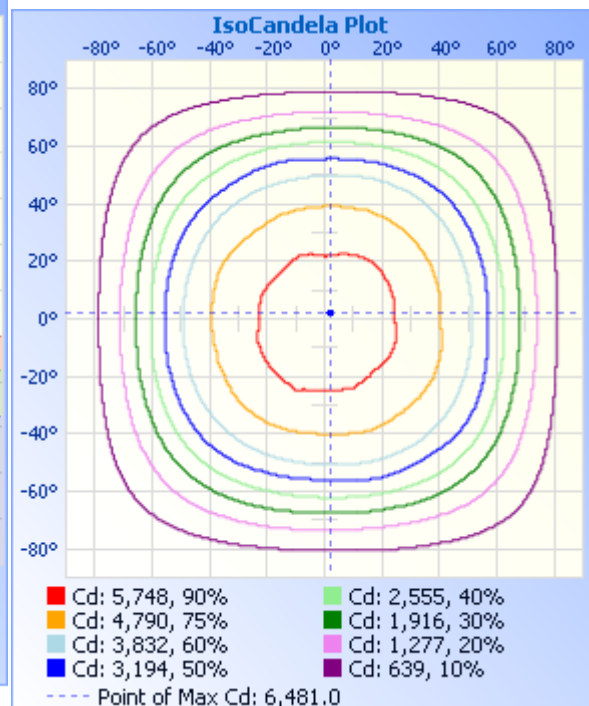
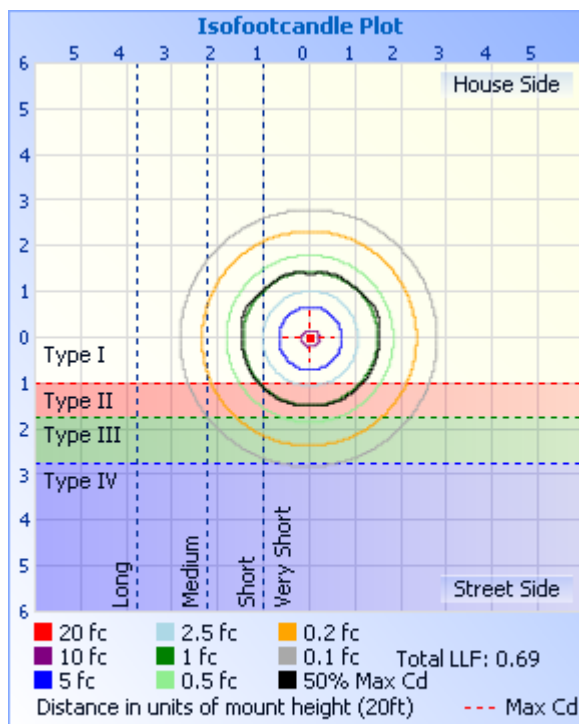


Table--1

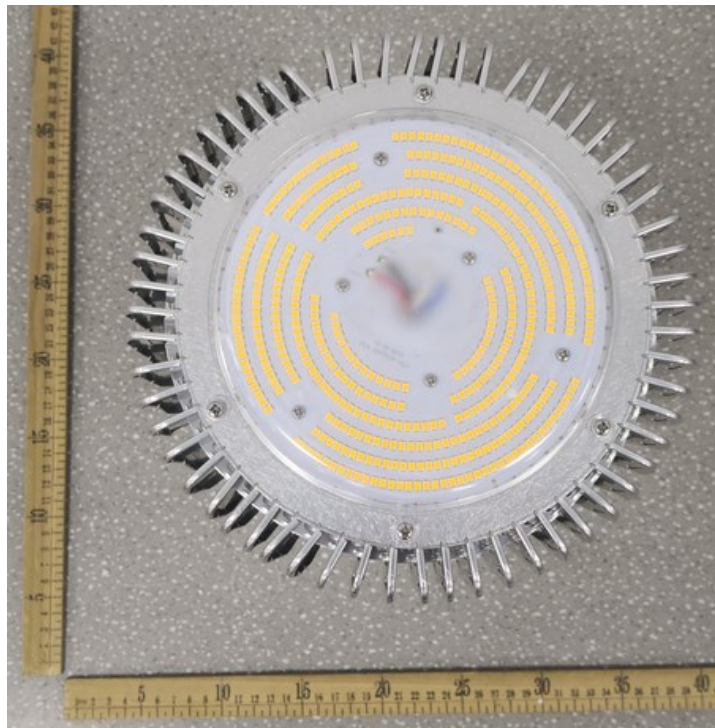
UNIT: cd

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	6373	6373	6373	6373	6373	6373	6373	6373	6373	6373	6373	6373	6373	6373	6373	6373			
5	6292	6283	6345	6306	6243	6320	6279	6290	6190	6257	6233	6229	6178	6333	6291	6308			
10	6115	6128	6160	6127	6101	6132	6070	6189	6089	6124	6152	6103	6018	6038	6075	6167			
15	6039	6055	6047	6065	6013	6008	6020	6119	6077	6066	6070	6041	5944	6003	5955	6048			
20	6034	5976	5997	5909	5855	5866	5900	5952	5869	5941	5971	5948	5924	5955	5900	6012			
25	5683	5748	5783	5717	5600	5727	5646	5695	5667	5707	5762	5791	5717	5777	5704	5782			
30	5514	5450	5470	5535	5471	5540	5457	5477	5497	5491	5464	5578	5521	5547	5492	5573			
35	5186	5163	5178	5188	5067	5103	5055	5122	5083	5071	5126	5125	5050	5240	5204	5244			
40	4781	4812	4807	4830	4764	4735	4717	4823	4756	4791	4834	4797	4769	4864	4803	4893			
45	4499	4514	4472	4423	4310	4355	4329	4400	4371	4377	4434	4377	4392	4448	4474	4550			
50	3962	3990	4037	3979	3873	3803	3743	3763	3783	3823	3809	3862	3886	3984	4007	4010			
55	3326	3331	3427	3337	3293	3295	3213	3279	3320	3346	3358	3248	3219	3340	3328	3438			
60	2912	2907	2888	2818	2751	2740	2644	2669	2643	2660	2733	2738	2771	2862	2882	2914			
65	2275	2253	2251	2257	2187	2113	2088	2076	2024	2049	2077	2140	2109	2191	2281	2330			
70	1652	1649	1608	1615	1566	1519	1502	1506	1488	1498	1510	1597	1578	1623	1631	1661			
75	1154	1114	1091	1066	1016	1015	975	972	965	993	1029	1062	1080	1085	1140	1136			
80	701	708	668	626	588	570	544	557	557	566	601	639	655	681	678	696			
85	337	330	312	299	275	256	261	256	265	276	284	300	302	303	326	332			
90	112	111	105	98.5	87.2	80.8	76.6	78.6	77.0	85.3	80.4	83.8	85.8	92.2	103	112			
95	80.7	74.9	67.6	71.5	64.9	65.5	66.1	67.3	71.5	70.2	67.2	70.5	67.4	71.3	77.3	75.1			
100	59.9	60.0	58.3	56.8	54.3	48.3	48.0	53.5	48.8	45.7	46.5	50.1	51.4	51.6	55.9	60.0			
105	65.1	63.0	61.8	59.5	59.6	56.5	50.0	50.7	53.7	50.3	51.3	57.2	60.4	67.2	69.6	72.8			
110	21.1	21.3	19.2	21.4	20.4	19.5	18.0	16.9	18.7	17.3	16.1	19.5	21.0	20.6	19.4	22.7			
115	11.6	11.6	10.5	12.1	11.8	11.6	12.1	11.4	12.1	10.7	9.73	11.1	11.6	10.7	8.93	10.7			
120	8.47	8.58	8.59	9.44	9.02	9.15	9.44	9.37	9.65	9.11	8.56	8.60	8.60	8.25	7.78	8.22			
125	7.89	7.94	7.88	8.17	8.23	8.27	8.56	8.50	9.09	9.00	8.67	8.53	8.48	8.33	8.08	8.12			
130	8.95	8.97	8.97	9.04	8.96	9.09	9.16	9.20	9.85	9.68	9.63	9.73	9.45	9.32	9.05	9.35			
135	9.87	9.68	9.82	9.97	9.91	10.1	10.0	10.1	10.6	10.4	10.5	10.4	10.2	10.3	10.00	10.1			
140	10.8	10.8	10.9	11.1	11.1	11.2	11.1	11.4	11.5	11.4	11.4	11.4	11.2	11.2	11.0	11.1			
145	12.3	12.2	12.3	12.3	12.2	12.3	12.2	12.4	12.6	12.5	12.6	12.5	12.3	12.3	12.1	12.3			
150	13.3	13.3	13.4	13.4	13.3	13.4	13.3	13.5	13.5	13.5	13.6	13.2	13.3	13.0	13.3				
155	13.6	13.5	13.7	13.6	13.5	13.6	13.7	13.8	13.7	13.8	13.7	13.7	13.5	13.5	13.4	13.6			
160	13.6	13.6	13.9	13.7	13.5	13.7	13.7	13.8	13.7	13.8	13.7	13.9	13.7	13.7	13.6	13.7			
165	13.9	14.0	14.1	14.2	14.1	14.2	14.1	14.3	14.2	14.2	14.2	14.2	14.0	14.1	14.0	14.1			
170	16.4	16.3	16.4	16.4	16.3	16.4	16.3	16.6	16.3	16.4	16.3	16.2	16.2	16.2	16.1	16.1			
175	18.6	18.2	18.4	18.6	18.4	18.3	18.4	18.6	18.2	18.2	18.5	18.3	18.1	18.1	17.9	18.1			
180	17.8	17.8	18.0	17.8	17.6	17.9	17.6	17.8	17.3	17.5	17.6	17.6	17.3	17.5	17.4	17.6			

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** *****

Report No.: JBE181108-H-A

Report Format Number STD/QP019-409-A/0-NB

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