

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-8232M30C

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-8232M30C	
Remark	N/A	
Representative (Tested) Model	LED-8232M30C	
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-D1(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	220-347Vac, 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-8232M30C		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE181108-	277.0	60	0.5223	140.9	0.9739	12.29
H-D1	347.0	60	0.4289	140.8	0.9460	16.34

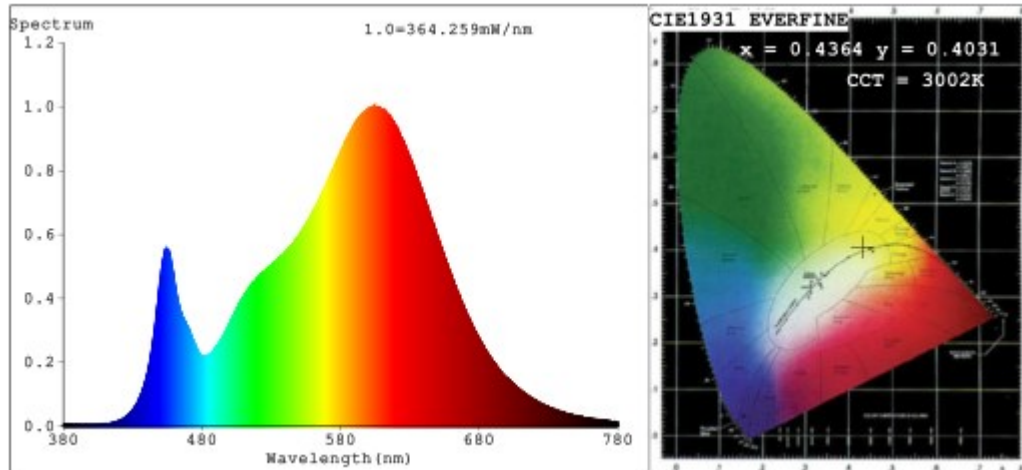
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	83	R9	13
Frequency (Hz)	60	R2	93	R10	84
CCT (K)	3002	R3	95	R11	81
Duv	-0.0003	R4	81	R12	73
Chromaticity (x, y)	x=0.4364 y=0.4031	R5	83	R13	86
Chromaticity (u', v')	u'=0.2506 v'=0.5209	R6	92	R14	98
Color Rendering Index (CRI)	83.9	R7	83	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)	17982	17993
Luminous Efficacy (lm/W)	127.62	127.79
Beam Angle (°)	112.4	--
Center Beam Candle Power (cd)	6268	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	4,851.4	27%
0-40	8,010.3	44.5%
0-60	14,234.4	79.2%
60-90	3,566.3	19.8%
70-100	1,574.3	8.8%
90-120	146.8	0.8%
0-90	17,800.7	99%
90-180	179.9	1%
0-180	17,980.6	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	583.4	3.2%	90-100	84.9	0.5%
10-20	1,677.2	9.3%	100-110	49.4	0.3%
20-30	2,590.8	14.4%	110-120	12.4	0.1%
30-40	3,158.8	17.6%	120-130	7.3	0%
40-50	3,326.4	18.5%	130-140	7.3	0%
50-60	2,897.7	16.1%	140-150	7.2	0%
60-70	2,076.8	11.6%	150-160	5.9	0%
70-80	1,122.0	6.2%	160-170	3.9	0%
80-90	367.5	2.0%	170-180	1.6	0%

Photometric Data

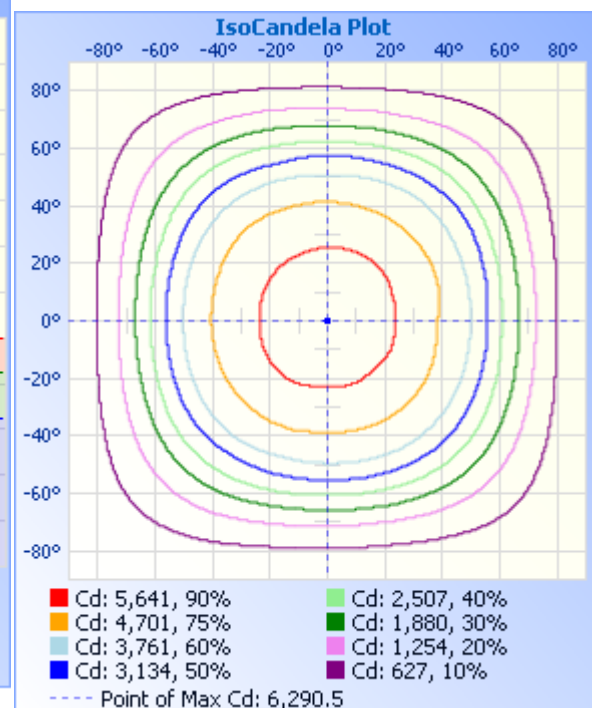
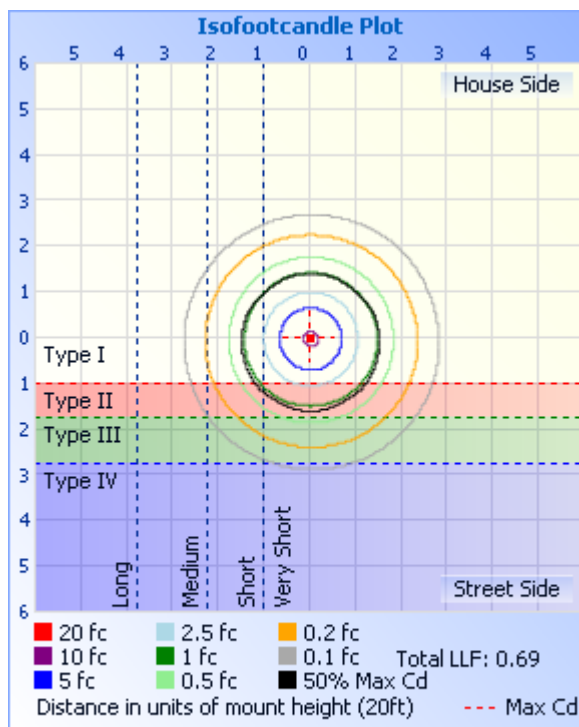
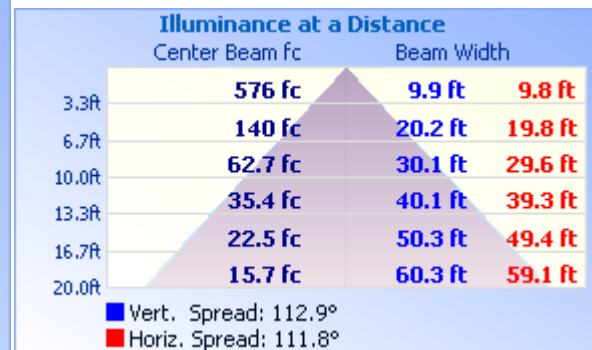
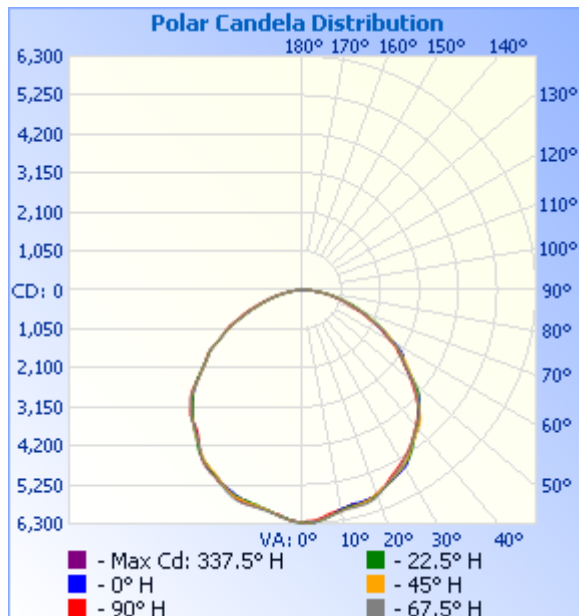


Table--1

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	6268	6268	6268	6268	6268	6268	6268	6268	6268	6268	6268	6268	6268	6268	6268	6268			
5	6143	6182	6204	6206	6205	6211	6205	6188	6145	6155	6160	6160	6140	6135	6158	6158			
10	5993	6007	5992	5982	5990	6028	6046	6052	5997	6014	6017	6021	5989	5978	5983	6018			
15	5958	5943	5909	5882	5928	5970	5977	6013	5967	5920	5930	5932	5878	5875	5910	5970			
20	5788	5804	5822	5850	5851	5870	5842	5906	5849	5833	5823	5779	5732	5780	5770	5839			
25	5573	5609	5664	5680	5682	5665	5652	5634	5588	5597	5608	5599	5534	5539	5507	5571			
30	5358	5426	5503	5488	5507	5454	5452	5393	5345	5346	5386	5393	5318	5317	5300	5353			
35	4904	5058	5115	5121	5123	5173	5127	5104	5086	5020	4977	4924	4933	4968	4943	4929			
40	4604	4731	4749	4789	4832	4813	4846	4777	4763	4707	4682	4669	4602	4607	4611	4624			
45	4270	4312	4362	4429	4423	4430	4433	4426	4396	4330	4274	4217	4189	4191	4235	4274			
50	3691	3747	3891	3963	3922	3981	3929	3898	3847	3800	3724	3619	3668	3688	3651	3637			
55	3159	3272	3324	3347	3342	3330	3399	3315	3293	3241	3123	3148	3124	3129	3120	3140			
60	2538	2646	2765	2823	2880	2832	2823	2814	2742	2658	2615	2554	2528	2527	2537	2546			
65	2039	2114	2165	2202	2214	2292	2247	2221	2149	2070	2010	1927	1939	1955	1957	1995			
70	1495	1540	1619	1673	1682	1734	1711	1675	1572	1498	1486	1403	1358	1344	1380	1437			
75	980	1035	1067	1141	1178	1207	1198	1161	1111	1032	987	934	906	907	910	951			
80	589	635	694	741	775	777	774	727	686	649	616	554	512	525	526	562			
85	288	311	352	361	366	382	381	365	336	305	279	258	245	247	252	273			
90	93.9	100	108	111	116	114	116	109	105	97.2	89.2	84.5	83.0	81.8	82.8	89.1			
95	71.4	71.5	78.1	74.4	76.3	78.8	77.7	81.4	78.5	73.8	77.1	69.8	69.2	71.9	67.6	72.1			
100	58.6	60.0	60.3	61.5	62.9	63.6	59.7	63.9	61.7	58.5	51.8	52.1	48.0	49.0	54.9	57.1			
105	52.0	60.5	61.5	67.7	73.6	70.2	71.1	75.0	72.4	66.5	58.4	54.3	52.4	48.1	50.3	50.1			
110	18.6	18.4	21.4	24.2	23.7	23.3	23.4	26.3	26.5	24.4	19.4	17.6	19.0	17.7	18.5	19.8			
115	11.8	10.7	11.2	11.7	12.1	11.5	11.2	11.1	11.7	12.9	10.9	10.2	10.8	10.3	11.3	11.9			
120	8.84	8.65	8.59	9.22	9.15	8.51	8.32	8.51	8.40	8.50	8.17	7.99	8.61	8.17	8.44	9.12			
125	8.00	7.92	7.80	8.05	7.99	7.83	7.74	7.74	7.76	7.92	7.86	7.76	7.99	7.96	7.91	8.04			
130	8.51	8.46	8.53	8.62	8.53	8.55	8.55	8.73	8.65	8.87	8.89	8.73	8.83	8.88	8.80	8.80			
135	9.37	9.40	9.36	9.27	9.39	9.42	9.34	9.28	9.30	9.46	9.56	9.57	9.70	9.67	9.58	9.58			
140	10.3	10.3	10.2	10.3	10.4	10.3	10.3	10.3	10.2	10.3	10.4	10.5	10.6	10.6	10.4	10.4			
145	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.3	11.4	11.5	11.5	11.6	11.6	11.5	11.4			
150	12.5	12.5	12.6	12.5	12.5	12.5	12.6	12.6	12.3	12.4	12.4	12.4	12.4	12.4	12.4	12.4			
155	12.8	12.9	13.0	13.0	13.0	13.0	13.1	13.1	12.4	12.6	12.7	12.7	12.7	12.8	12.7	12.6			
160	13.4	13.4	13.3	13.4	13.4	13.3	13.3	13.3	12.6	12.6	12.8	12.8	12.8	12.8	12.8	12.7			
165	13.8	13.8	13.9	13.8	13.8	13.7	13.8	13.8	12.9	13.0	13.1	13.2	13.1	13.1	13.1	13.0			
170	15.6	15.6	15.7	15.6	15.6	15.5	15.8	15.5	15.0	15.0	15.2	15.0	15.1	15.1	15.0	14.9			
175	17.3	17.3	17.4	17.3	17.5	17.2	17.2	17.3	17.1	17.2	17.3	17.2	17.2	17.1	17.0	17.1			
180	16.5	16.6	16.5	16.9	16.9	17.0	17.0	16.8	16.2	16.3	16.4	16.3	16.3	16.4	16.3	16.3			

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 *****