

## **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-8232M50C**

**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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Ningbo, Zhejiang

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-8232M50C	
Remark	N/A	
Representative (Tested) Model	LED-8232M50C	
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	SPMWHT228FD5WAR☆S3	
Dimming	Non-Dimmable	
Sample Number	JBE181108-H-F1(5000K)	
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	5000K

### 1.3 Test Specifications:

Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2015 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>
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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  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-8232M50C		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JBE181108-	277.0	60	0.5221	140.3	0.9701	12.23
H-F1	347.0	60	0.4313	140.8	0.9407	15.66

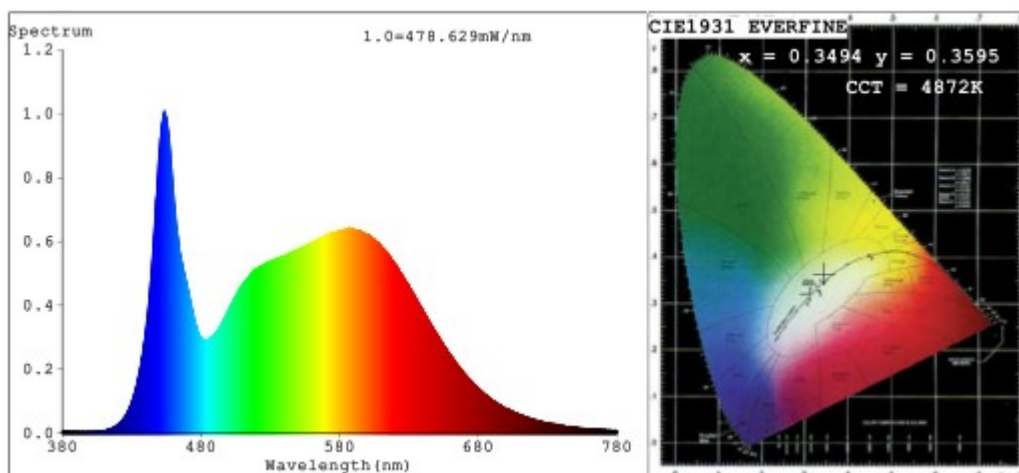
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	83	R9	16
Frequency (Hz)	60	R2	92	R10	79
CCT (K)	4872	R3	96	R11	81
Duv	0.0022	R4	82	R12	58
Chromaticity (x, y)	x=0.3494 y=0.3595	R5	83	R13	86
Chromaticity (u', v')	u'=0.2112 v'=0.4891	R6	87	R14	98
Color Rendering Index (CRI)	84.8	R7	87	R15	78
R9	16	R8	69	--	--

### Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	19442	19544
Luminous Efficacy (lm/W)	138.57	138.81
Beam Angle (°)	115.2	--
Center Beam Candle Power (cd)	6542	--

## Spectral Power Distribution & Chromaticity Diagram

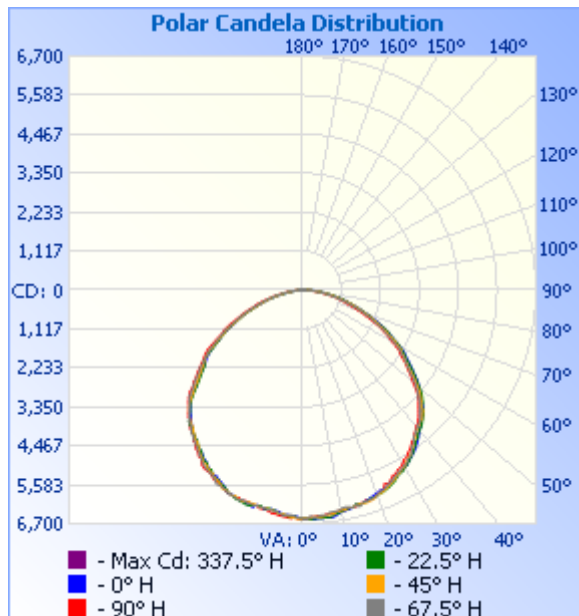


## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	5,172.0	26.6%
0-40	8,571.6	44.1%
0-60	15,332.6	78.9%
60-90	3,924.7	20.2%
70-100	1,712.9	8.8%
90-120	147.6	0.8%
0-90	19,257.3	99.1%
90-180	182.9	0.9%
0-180	19,440.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	617.0	3.2%	90-100	85.1	0.4%
10-20	1,787.7	9.2%	100-110	49.8	0.3%
20-30	2,767.2	14.2%	110-120	12.6	0.1%
30-40	3,399.6	17.5%	120-130	7.7	0%
40-50	3,595.3	18.5%	130-140	7.8	0%
50-60	3,165.7	16.3%	140-150	7.7	0%
60-70	2,296.9	11.8%	150-160	6.3	0%
70-80	1,239.9	6.4%	160-170	4.1	0%
80-90	387.8	2.0%	170-180	1.7	0%

## Photometric Data



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
3.3ft	601 fc	10.3 ft	10.3 ft
6.7ft	146 fc	20.9 ft	20.9 ft
10.0ft	65.4 fc	31.1 ft	31.3 ft
13.3ft	37.0 fc	41.4 ft	41.6 ft
16.7ft	23.5 fc	52.0 ft	52.2 ft
20.0ft	16.4 fc	62.3 ft	62.5 ft

■ Vert. Spread: 114.6°  
■ Horiz. Spread: 114.8°

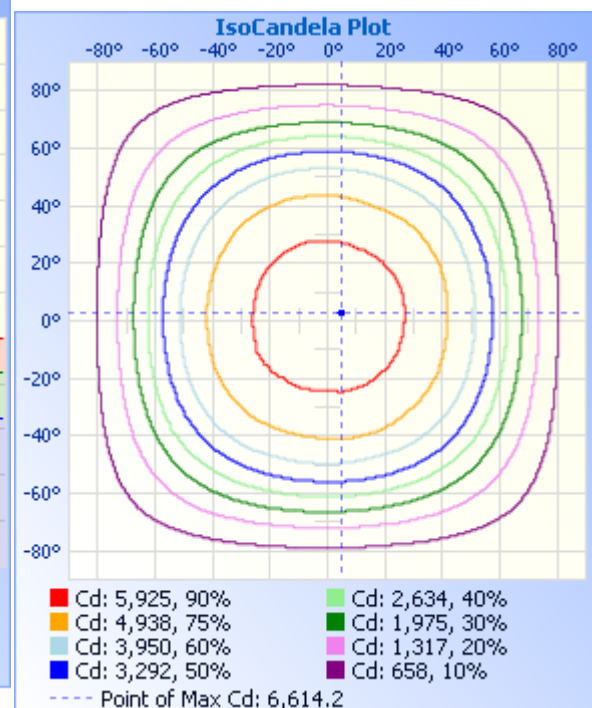
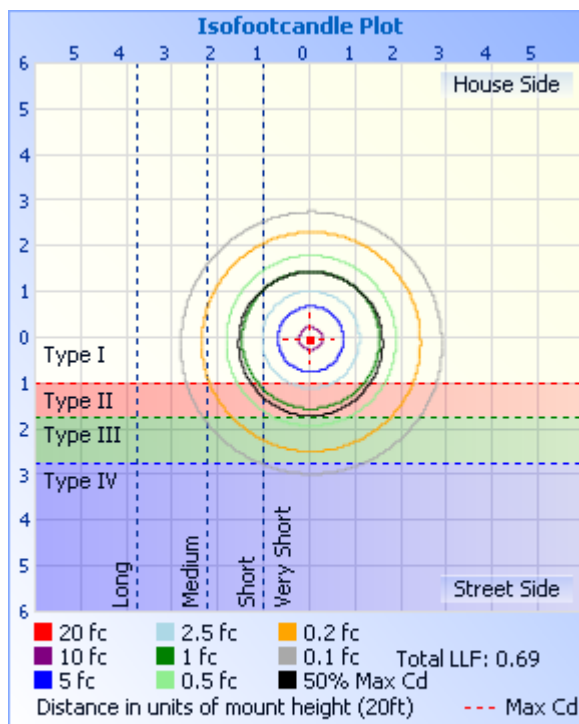


Table--1

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	6542	6542	6542	6542	6542	6542	6542	6542	6542	6542	6542	6542	6542	6542	6542	6542			
5	6505	6565	6581	6532	6562	6555	6509	6470	6507	6542	6517	6431	6459	6451	6424	6470			
10	6361	6429	6475	6484	6449	6436	6408	6362	6400	6429	6382	6381	6354	6354	6323	6328			
15	6255	6326	6322	6348	6351	6361	6349	6412	6354	6340	6281	6317	6327	6351	6278	6280			
20	6203	6235	6260	6197	6203	6273	6260	6250	6264	6189	6134	6117	6203	6199	6182	6191			
25	6001	6048	6060	6066	6066	6115	6079	6023	5995	6017	5915	5931	5873	5928	5955	5976			
30	5775	5774	5817	5825	5849	5854	5841	5811	5749	5769	5691	5578	5621	5645	5703	5726			
35	5372	5460	5542	5495	5606	5566	5498	5472	5431	5445	5416	5322	5294	5268	5295	5365			
40	5047	5103	5134	5114	5226	5234	5149	5122	5086	5113	5084	4974	4969	5043	4977	5011			
45	4630	4729	4806	4754	4871	4892	4883	4765	4708	4650	4601	4467	4559	4553	4597	4585			
50	4068	4190	4248	4334	4384	4397	4321	4239	4155	4115	4018	3887	3859	3821	3895	4035			
55	3485	3484	3565	3700	3785	3764	3641	3631	3583	3515	3475	3387	3345	3416	3412	3434			
60	2889	3015	3157	3186	3221	3220	3156	3072	2986	2920	2840	2749	2712	2694	2740	2812			
65	2280	2346	2454	2504	2610	2594	2507	2420	2366	2299	2178	2127	2080	2062	2083	2138			
70	1643	1789	1845	1850	1911	1906	1878	1834	1718	1631	1565	1519	1504	1471	1504	1557			
75	1129	1217	1296	1332	1365	1357	1331	1280	1184	1128	1082	996	995	986	1009	1059			
80	644	747	787	845	868	888	855	793	726	658	575	541	529	520	555	608			
85	297	342	396	443	467	464	436	392	335	312	269	241	228	232	247	283			
90	84.6	106	123	157	175	163	151	120	88.8	84.0	73.0	75.6	74.8	77.4	80.0	86.4			
95	71.9	76.9	83.7	82.0	91.8	87.4	79.9	73.8	67.5	69.5	70.4	72.4	77.3	74.8	80.0	76.7			
100	56.2	70.3	76.5	81.2	87.6	81.5	80.5	75.1	62.6	52.3	45.4	39.9	40.4	46.3	43.9	47.2			
105	66.9	58.8	54.7	50.6	48.7	49.0	51.8	55.7	52.5	56.2	52.2	44.3	42.0	43.3	49.2	57.2			
110	18.0	24.6	29.5	35.9	40.3	37.2	31.7	26.3	24.4	19.5	16.7	13.6	16.4	13.1	14.2	18.3			
115	10.9	11.5	12.3	13.2	13.6	13.1	12.7	11.8	11.8	10.1	9.98	9.38	9.52	8.98	9.34	10.7			
120	8.91	9.11	9.70	9.62	9.33	9.28	9.13	8.83	8.41	7.88	7.92	8.11	8.19	8.14	8.04	8.29			
125	8.44	8.62	8.70	8.43	8.30	8.33	8.26	8.24	8.10	8.13	8.22	8.49	8.66	8.72	8.39	8.40			
130	9.60	9.40	9.35	9.04	8.94	9.08	9.04	9.07	9.29	9.29	9.48	9.69	9.97	10.1	9.68	9.62			
135	10.3	10.1	9.86	9.74	9.70	9.76	9.76	9.85	9.85	9.92	10.02	10.2	10.4	10.5	10.2	10.3			
140	11.3	11.1	11.0	10.8	10.7	10.9	10.9	11.0	10.7	10.9	11.1	11.2	11.3	11.4	11.2	11.2			
145	12.5	12.4	12.2	12.1	12.0	12.2	12.2	12.2	12.0	12.1	12.2	12.3	12.4	12.6	12.4	12.3			
150	13.7	13.5	13.4	13.2	13.2	13.3	13.3	13.3	13.0	13.2	13.1	13.2	13.3	13.5	13.3	13.3			
155	13.8	13.9	13.8	13.8	13.7	13.8	13.7	13.8	13.1	13.3	13.3	13.4	13.6	13.5	13.5	13.4			
160	14.4	14.3	14.1	14.1	14.0	14.1	14.1	14.1	13.3	13.0	13.4	13.4	13.6	13.6	13.6	13.5			
165	14.8	14.7	14.6	14.5	14.5	14.5	14.5	14.6	13.6	13.7	13.7	13.7	13.9	13.8	13.9	13.8			
170	16.6	16.4	16.3	16.2	16.2	16.3	16.2	16.2	16.0	16.0	15.8	15.9	16.0	16.2	16.0	16.0			
175	18.2	18.4	18.5	18.4	18.4	18.5	18.4	18.3	17.9	17.9	17.9	17.9	17.9	17.9	17.8	17.9			
180	17.8	17.9	18.0	17.8	17.9	17.8	17.6	17.7	17.2	17.4	17.3	17.3	17.4	17.4	17.3	17.3			

### 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 \*\*\*\*\***