

**LM-79-08 Test Report**

For

**LIGHT EFFICIENT DESIGN****(Brand Name:N/A)**

188 S. Northwest Highway Cary, IL60013

**LED Luminaires**

Model name(s): LED-8029M30C-A

Representative (Tested) Model: LED-8029M30C-A

Model Different: N/A

Test &amp; Report By:

*Garman Mo*

Engineer: Garman Mo

Date: Apr.13,2017

Review By:

*Tommy Liang*

Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

**Laboratory: Standard-Tech Co. Ltd Testing Center****NVLAP CODE: 201011-0**

Report Format Number STD/QR4909-A/2

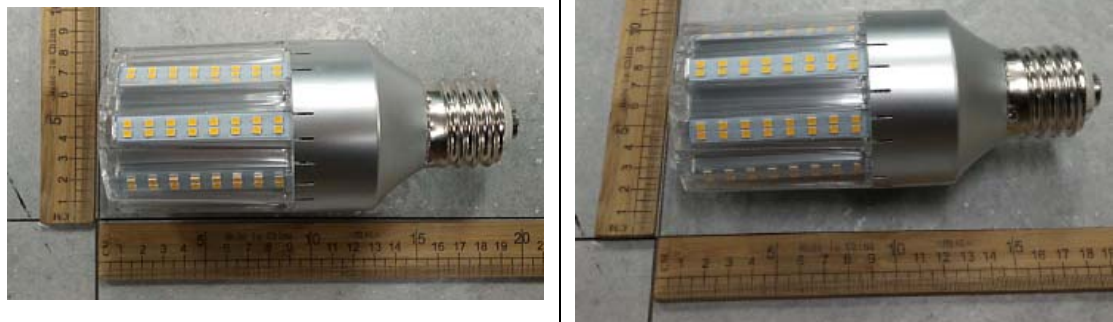
Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

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**1.1 Product Information:**

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8029M30C-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	220-347Vac, 50/60 Hz	
Nominal Power	24W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-AK1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
<b>Photo</b>		
		

**1.2 Test Specifications:**

Date of Receipt	Jan 16,2017
Date of Test	Jan 17,2017
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 C78.377-2008 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

**1.3 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 277 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 277 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 277 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.

**2.1 Electrical, Photometric and Chromaticity Measurements**
*(Refer to Work Instruction QD25)*

Test date	2017-01-17	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8029M30C-A		

**Electrical Measurement :**

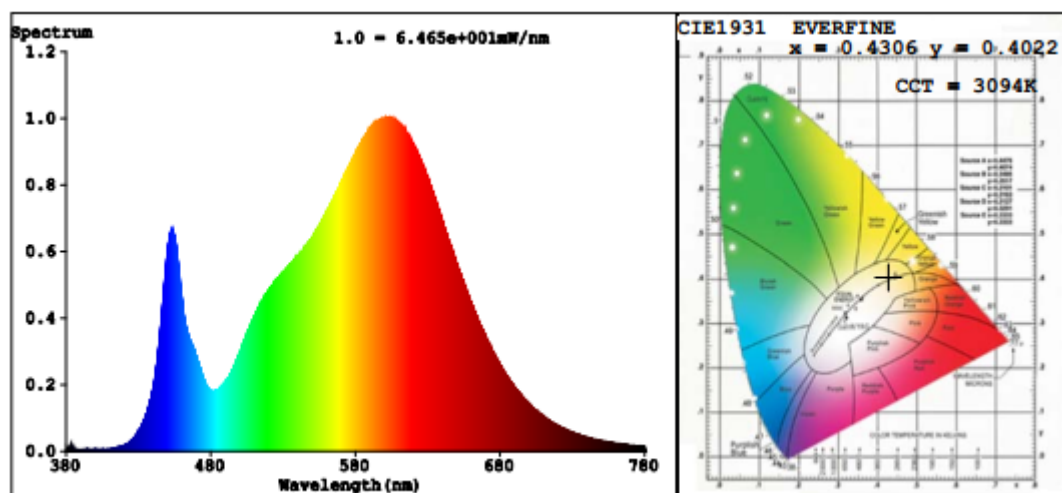
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-	277.0	60	0.0879	22.50	0.9243
AK1	347.0	60	0.0719	22.66	0.9087

**Chromaticity Measurement - Sphere-Spectroradiometer Method :**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	80	R9	3
Frequency (Hz)	60	R2	90	R10	76
CCT (K)	3094	R3	96	R11	77
Duv	0.0002	R4	79	R12	64
Chromaticity (x, y)	x=0.4306 y=0.4022	R5	79	R13	82
Chromaticity (u', v')	u'=0.2473 v'=0.5197	R6	87	R14	98
Color Rendering Index (CRI)	81.4	R7	83	R15	72
R9	3	R8	58	--	--

**Photometric Measurement – Goniophotometer Method :**

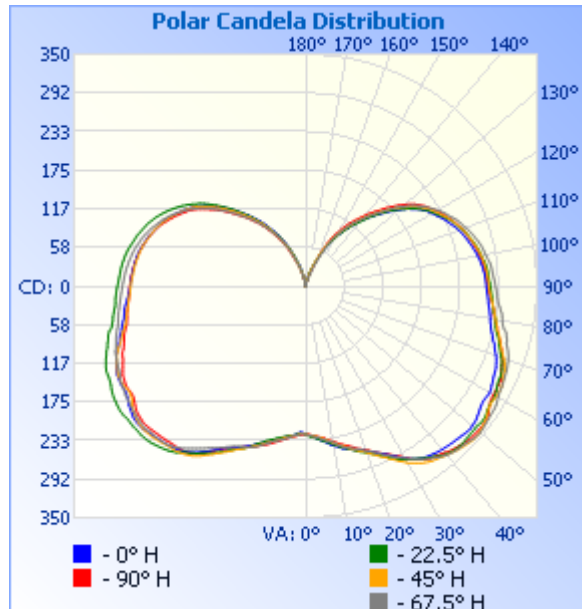
Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	3128.7	3127.6
Luminous Efficacy (lm/W)	139.05	138.02
Beam Angle (°)	267.0	--
Center Beam Candle Power (cd)	224	--

**Spectral Power Distribution & Chromaticity Diagram**

**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	221.9	7.1%
0-40	417.2	13.3%
0-60	966.4	30.9%
60-90	940.5	30.1%
70-100	919.9	29.4%
90-120	807.8	25.8%
0-90	1,906.9	60.9%
90-180	1,221.9	39.1%
0-180	3,128.8	100%

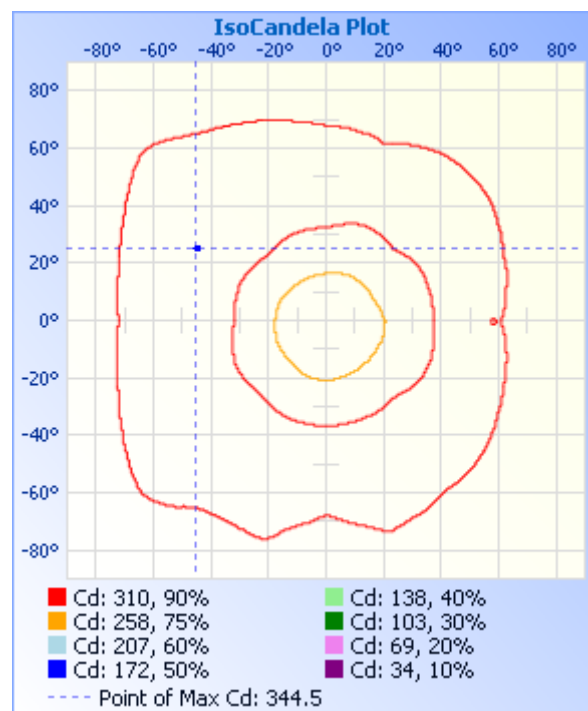
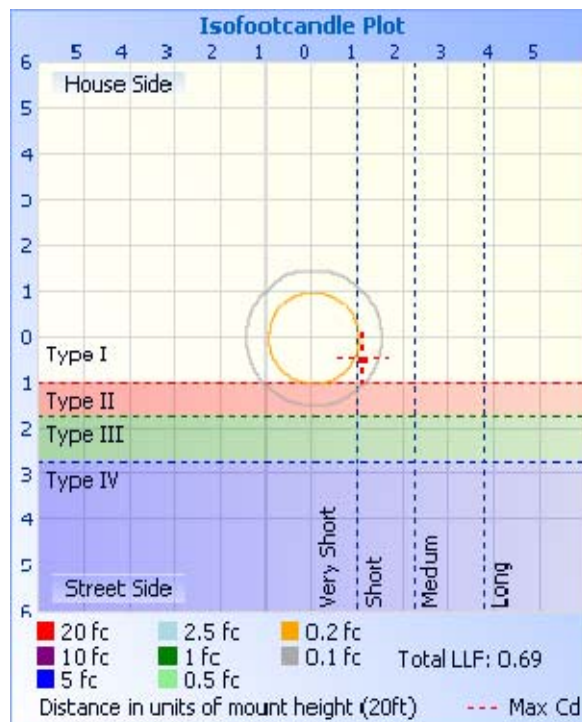
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	22.1	0.7%	90-100	296.5	9.5%
10-20	71.1	2.3%	100-110	274.5	8.8%
20-30	128.7	4.1%	110-120	236.8	7.6%
30-40	195.3	6.2%	120-130	185.5	5.9%
40-50	254.7	8.1%	130-140	123.8	4%
50-60	294.5	9.4%	140-150	70.2	2.2%
60-70	317.0	10.1%	150-160	28.8	0.9%
70-80	316.6	10.1%	160-170	5.7	0.2%
80-90	306.8	9.8%	170-180	0.2	0%

**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width
17.0ft	<b>0.77 fc</b>	
34.0ft	<b>0.19 fc</b>	
51.0ft	<b>0.09 fc</b>	
68.0ft	<b>0.05 fc</b>	
85.0ft	<b>0.03 fc</b>	
102.0ft	<b>0.02 fc</b>	



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Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	224	224	224	224	224	224	224	224	224	224	224	224	224	224	224	224	224
1	225	226	225	225	224	223	223	222	221	222	222	223	224	225	226	226	225
2	226	228	226	226	225	223	222	221	221	222	223	224	225	226	227	226	226
3	228	229	226	227	226	224	223	222	222	224	225	225	226	227	228	227	228
4	230	230	228	228	227	226	225	225	225	225	226	226	227	228	229	229	230
5	232	232	229	230	228	227	226	226	227	226	227	227	228	229	232	231	232
6	235	234	231	232	230	228	227	228	228	227	228	229	230	231	234	233	235
7	237	236	233	234	231	229	228	229	229	228	229	231	232	232	236	236	237
8	239	238	235	236	234	230	229	231	230	230	231	233	233	234	237	237	239
9	242	241	237	238	236	231	231	232	233	231	233	235	236	236	240	239	242
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11	246	245	243	243	241	237	235	235	237	234	238	238	240	241	244	242	246
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14	253	252	250	251	248	245	243	243	243	240	244	245	246	247	249	250	253
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17	259	260	259	257	255	254	254	250	249	248	252	253	252	257	256	257	259
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29	296	299	303	296	294	294	291	282	283	288	290	279	284	289	295	289	296
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61	321	330	333	335	328	340	323	334	316	334	313	316	310	317	317	314	321
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93	272	277	276	284	274	285	266	283	264	282	263	274	264	271	269	270	272
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124	208	208	213	215	217	221	213	222	211	219	210	208	206	202	205	201	208

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125	203	204	209	211	213	217	210	218	208	215	208	204	202	199	201	197	203
126	198	200	204	207	209	214	207	214	205	211	204	200	197	194	196	192	198
127	194	195	200	202	206	209	203	209	201	206	199	196	193	188	190	187	194
128	189	189	194	197	201	204	200	206	197	203	196	191	189	184	186	182	189
129	183	185	190	192	196	199	196	201	194	198	190	187	184	178	181	178	183
130	179	180	185	187	191	193	191	196	189	193	186	181	180	173	176	172	179
131	173	174	180	181	186	189	187	191	184	187	181	176	175	169	170	167	173
132	168	170	175	174	180	184	181	185	180	183	177	172	171	164	165	163	168
133	162	164	169	169	175	179	177	180	175	177	172	166	165	159	160	157	162
134	157	159	163	163	170	173	172	174	171	171	167	162	161	154	155	152	157
135	153	153	159	157	164	168	168	169	165	167	162	157	155	148	150	147	153
136	148	148	153	153	159	162	162	163	161	162	158	152	150	144	146	142	148
137	143	143	148	148	154	157	158	158	156	157	152	147	146	139	141	138	143
138	139	137	144	143	149	152	153	152	151	151	147	143	142	134	137	133	139
139	133	131	138	137	145	146	149	148	147	147	143	138	138	130	132	128	133
140	129	127	134	132	139	142	144	143	142	141	138	134	133	125	127	124	129
141	124	122	128	128	134	136	139	138	138	137	134	130	129	121	123	119	124
142	118	118	123	123	130	131	134	133	133	132	128	125	124	116	118	115	118
143	114	113	118	119	125	126	128	129	128	126	124	121	120	111	113	110	114
144	109	108	113	114	120	121	124	124	123	122	119	116	115	107	109	105	109
145	103	103	108	109	116	117	119	119	119	117	116	112	111	102	103	101	103
146	99	98	103	105	110	112	115	114	114	112	111	106	106	98	99	95	99
147	94	94	98	99	106	108	109	109	110	107	105	102	100	93	94	91	94
148	90	88	94	93	100	102	105	105	105	103	101	97	96	88	88	86	90
149	85	83	89	89	95	97	99	100	99	97	95	93	91	84	84	81	85
150	79	79	85	83	90	92	94	96	95	93	91	88	86	79	78	76	79
151	74	74	80	78	85	88	90	90	90	88	85	84	81	74	74	71	74
152	69	68	74	70	80	83	84	86	86	84	81	79	77	70	69	65	69
153	64	64	70	63	73	78	80	80	81	79	76	75	71	64	63	60	64
154	58	58	63	55	65	73	75	74	76	73	72	70	67	60	58	55	58
155	53	54	57	49	58	68	71	70	71	69	66	64	61	54	52	50	53
156	49	49	52	44	51	62	66	64	66	65	62	59	55	48	48	45	49

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157	43	44	45	37	43	56	62	60	60	61	57	53	50	44	43	41	43
158	38	40	42	29	37	52	56	55	55	55	51	48	45	39	38	37	38
159	35	35	37	23	31	47	51	51	50	50	45	43	41	36	34	33	35
160	31	32	32	17	28	42	45	46	45	45	39	39	37	32	30	31	31
161	27	27	28	14	23	37	40	42	41	41	36	34	34	28	26	27	27
162	23	23	23	11	20	33	37	37	36	36	32	31	30	24	24	22	23
163	20	21	20	9	18	29	33	32	33	31	28	27	26	20	20	19	20
164	17	16	15	8	15	27	29	29	29	27	23	24	23	17	17	16	17
165	14	13	12	6	12	23	25	25	26	24	22	19	19	16	15	13	14
166	12	11	10	5	9	19	21	21	21	21	19	15	16	12	12	10	12
167	8	10	8	4	6	17	15	14	18	18	16	13	13	10	10	8	8
168	7	7	5	4	4	11	11	9	13	14	13	11	11	8	7	7	7
169	6	5	4	2	3	8	7	4	9	12	10	10	9	6	5	5	6
170	3	4	3	2	3	6	4	2	6	9	8	7	7	4	4	3	3
171	3	3	2	1	2	6	3	1	3	5	7	6	5	3	2	1	3
172	2	2	2	1	1	3	1	2	2	4	5	5	3	2	2	1	2
173	1	1	1	1	1	2	1	1	2	4	4	3	2	1	1	1	1
174	1	1	1	1	1	1	1	1	2	3	2	2	2	1	1	1	1
175	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1
176	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1
177	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
178	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
179	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-327	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-12	2017-07-11
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
GO-R5000	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-12	2017-07-11
PF210	Power Meter for Goniophotometer	2016-07-07	2017-07-06
Expand Uncertainty: Photometric Measurement (Sphere):2.04%, k=2 Chromaticity Measurement(Sphere):28.8K, k=2 Photometric Measurement(Goniophotometer):2.36%, k=2			

**\*\*\*\*\* END OF REPORT \*\*\*\*\***