

**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-8038E57C-A

Representative (Tested) Model: LED-8038E57C-A

Model Different: N/A

Test &amp; Report By:

*Garman Mo*

Engineer: Garman Mo

Date: Mar.30,2017

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

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**1.1 Product Information:**

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8038E57C-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	277-347Vac, 50/60 Hz	
Nominal Power	14W	
Rated Initial Lamp Lumen	--	
Declared CCT	5700K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-U1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**

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**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-8038E57C-A		

**Electrical Measurement :**

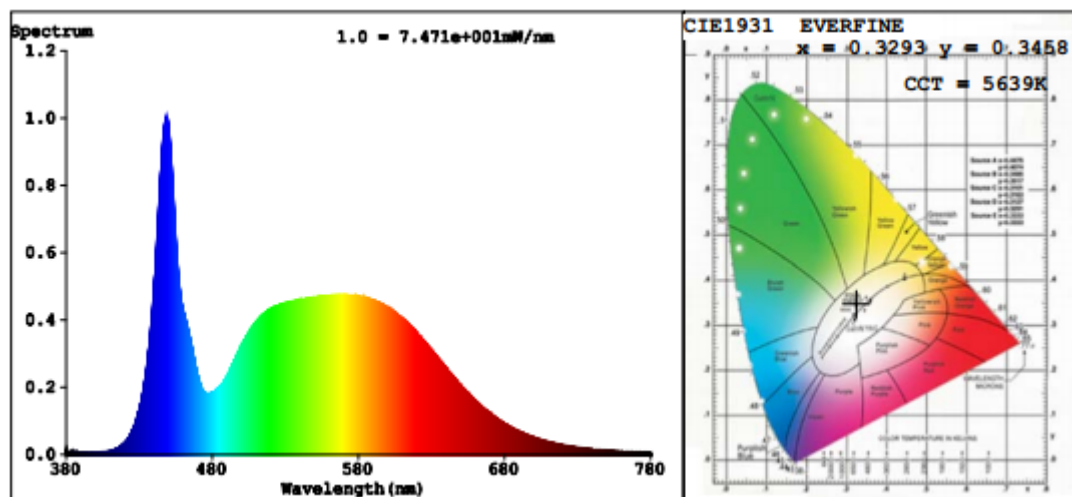
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-	277.0	60	0.0588	14.98	0.9195
U1	347.0	60	0.0418	13.37	0.9207

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

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	80	R9	6
Frequency (Hz)	60	R2	85	R10	66
CCT (K)	5639	R3	89	R11	83
Duv	0.0039	R4	83	R12	60
Chromaticity (x, y)	x=0.3293 y=0.3458	R5	82	R13	81
Chromaticity (u', v')	u'=0.2029 v'=0.4795	R6	81	R14	94
Color Rendering Index (CRI)	82.2	R7	87	R15	75
R9	6	R8	69	--	--

**Photometric Measurement – Goniophotometer Method :**

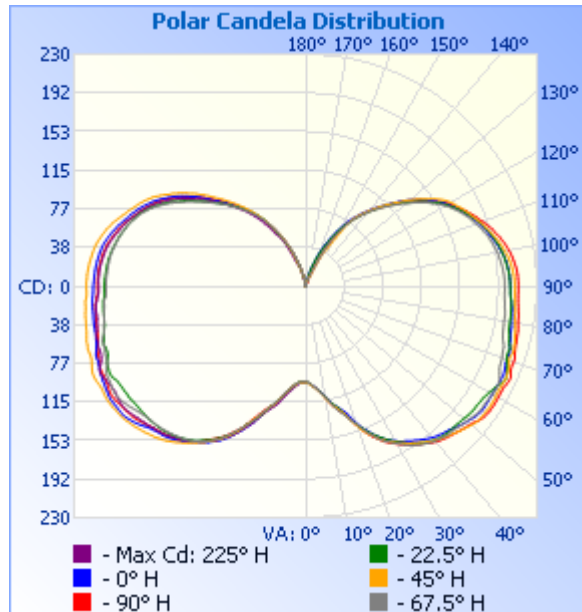
Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	2154.9	1911.7
Luminous Efficacy (lm/W)	143.85	142.98
Beam Angle (°)	272.6	--
Center Beam Candle Power (cd)	95	--

**Spectral Power Distribution & Chromaticity Diagram**

**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	120.2	5.6%
0-40	239.1	11.1%
0-60	588.8	27.3%
60-90	664.1	30.8%
70-100	670.6	31.1%
90-120	602.2	27.9%
0-90	1,252.9	58.1%
90-180	902.1	41.9%
0-180	2,155.1	100%

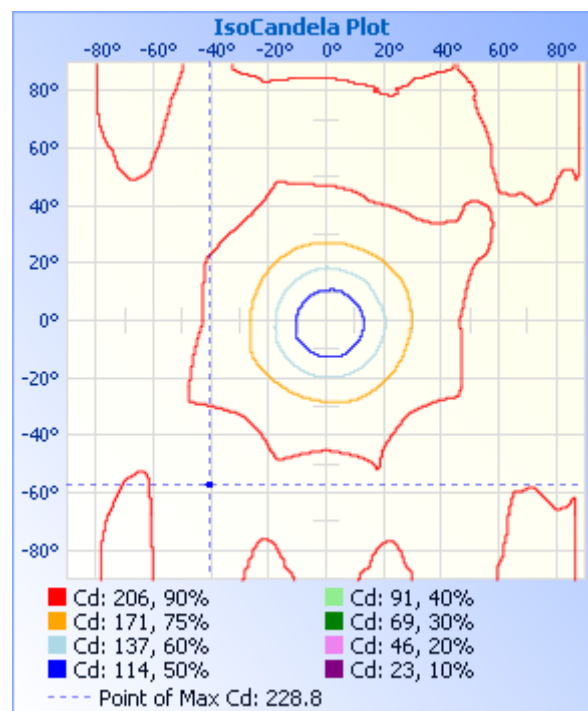
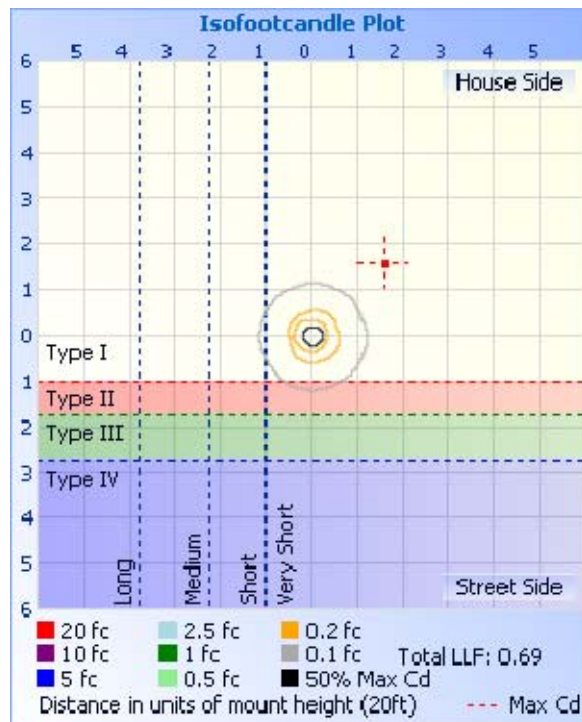
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	9.7	0.5%	90-100	221.7	10.3%
10-20	35.7	1.7%	100-110	205.2	9.5%
20-30	74.8	3.5%	110-120	175.3	8.1%
30-40	118.9	5.5%	120-130	134.1	6.2%
40-50	158.2	7.3%	130-140	89.9	4.2%
50-60	191.5	8.9%	140-150	52.1	2.4%
60-70	215.2	10.0%	150-160	20.0	0.9%
70-80	223.6	10.4%	160-170	3.7	0.2%
80-90	225.3	10.5%	170-180	0.1	0%

## Photometric Data



**Illuminance at a Distance**

	Center Beam fc	Beam Width
17.0ft	<b>0.33 fc</b>	
34.0ft	<b>0.08 fc</b>	
51.0ft	<b>0.04 fc</b>	
68.0ft	<b>0.02 fc</b>	
85.0ft	<b>0.01 fc</b>	
102.0ft	<b>0.01 fc</b>	



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	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
1	96	95	96	95	96	94	94	94	95	95	95	95	95	94	95	95	96
2	96	96	97	96	96	94	95	94	95	95	96	95	95	95	95	95	96
3	98	98	98	97	98	95	95	95	95	95	96	95	96	95	96	96	98
4	99	99	99	99	99	97	97	96	96	96	96	96	96	96	97	98	99
5	100	101	101	100	101	98	98	97	97	97	97	97	97	98	99	99	100
6	102	102	103	102	102	100	100	99	99	98	98	98	98	99	100	101	102
7	104	104	105	104	105	101	102	100	100	100	100	100	100	101	102	103	104
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14	123	123	124	126	124	121	121	120	120	117	119	118	119	119	121	121	123
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16	127	129	130	131	130	127	128	126	125	124	124	124	124	125	126	127	127
17	130	133	133	134	133	131	131	128	128	127	127	127	126	129	129	131	130
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22	152	152	155	153	156	149	150	149	149	145	145	146	144	147	148	150	152
23	155	156	159	158	159	152	155	153	152	149	150	150	149	150	153	153	155
24	159	160	162	162	163	156	158	156	157	153	154	153	153	154	156	157	159
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26	166	167	169	169	170	163	167	166	164	162	162	161	161	160	164	165	166
27	170	169	172	173	173	167	170	170	168	166	166	165	164	163	167	169	170
28	172	173	175	175	176	170	174	173	171	168	170	169	168	167	170	172	172

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29	175	175	177	178	178	173	176	177	175	171	173	173	171	170	173	176	175
30	177	178	179	180	181	175	179	179	177	174	176	175	174	173	177	179	177
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60	214	211	218	215	221	208	226	215	224	208	227	217	221	200	217	218	214

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61	214	212	218	215	221	209	226	215	224	208	227	217	221	200	217	219	214
62	214	214	218	215	221	210	226	216	223	209	227	217	221	201	217	220	214
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93	203	203	207	198	211	199	217	199	210	199	218	198	207	192	206	201	203
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124	152	149	155	148	151	146	161	148	159	151	163	149	158	145	155	153	152

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125	148	146	151	145	148	143	158	145	156	148	160	146	154	142	152	150	148
126	146	143	147	141	145	139	153	142	153	144	157	143	151	139	148	147	146
127	143	139	144	138	141	136	149	139	149	141	153	139	148	136	145	144	143
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131	130	126	129	124	127	122	133	127	133	127	139	127	134	124	130	131	130
132	125	123	125	121	123	119	129	124	129	124	135	123	130	121	126	128	125
133	121	120	121	117	119	116	125	121	125	121	131	121	126	118	123	125	121
134	118	116	117	114	116	114	121	119	122	119	127	118	123	115	119	122	118
135	115	113	115	111	113	110	118	115	118	115	124	115	120	111	116	119	115
136	111	110	111	108	109	107	115	113	115	113	120	112	116	109	113	115	111
137	108	106	107	105	106	105	112	110	112	110	117	109	112	106	109	112	108
138	105	102	104	102	103	102	108	107	108	107	113	106	109	103	106	109	105
139	102	99	101	98	100	99	105	104	106	104	109	103	106	99	103	105	102
140	98	96	97	96	97	96	102	101	102	102	106	101	103	96	99	101	98
141	95	93	94	92	93	93	98	98	99	99	102	97	100	93	96	98	95
142	92	89	91	89	90	90	95	95	96	96	99	95	96	90	93	93	92
143	89	86	88	86	86	87	91	92	92	93	95	92	93	87	90	90	89
144	85	83	84	82	83	84	88	89	88	91	92	89	89	84	86	86	85
145	83	79	80	78	80	80	84	86	85	88	88	86	86	81	82	83	83
146	79	75	75	75	76	77	80	82	82	85	85	83	82	78	79	79	79
147	76	72	64	70	73	74	77	80	79	81	81	80	79	72	74	75	76
148	71	69	56	66	67	70	73	76	76	78	77	77	75	64	69	72	71
149	67	65	51	60	61	67	70	72	73	73	74	74	71	59	66	68	67
150	64	61	43	55	56	63	66	69	70	70	70	70	68	52	61	64	64
151	59	57	41	49	50	60	63	65	66	66	67	67	64	45	58	61	59
152	55	54	39	43	44	55	58	62	63	61	63	62	61	39	55	57	55
153	52	49	34	35	37	51	55	57	58	58	60	59	58	34	52	53	52
154	48	45	26	29	30	46	50	53	54	53	55	55	55	34	49	49	48
155	45	42	20	22	23	42	45	49	49	50	51	51	51	33	44	45	45
156	41	38	13	17	17	36	42	45	45	46	47	48	48	30	38	42	41

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157	37	35	10	13	11	31	37	40	42	43	43	44	44	28	34	38	37
158	34	31	10	10	6	26	34	36	38	39	39	41	40	26	28	34	34
159	30	28	11	8	3	23	31	32	35	36	35	37	36	24	26	31	30
160	26	26	9	6	4	20	28	29	31	32	31	34	32	23	24	27	26
161	23	22	8	3	5	16	24	27	28	28	26	30	29	21	23	24	23
162	20	19	7	1	5	13	22	24	25	25	22	26	25	19	21	21	20
163	17	16	6	1	5	10	18	21	22	21	20	23	22	17	19	17	17
164	15	12	4	1	5	7	15	18	19	19	17	20	19	14	16	15	15
165	11	9	3	1	3	5	13	15	16	16	15	17	17	12	13	12	11
166	8	5	1	1	2	4	10	13	13	14	12	15	15	9	10	10	8
167	7	2	1	1	1	3	8	10	11	11	11	12	12	7	7	8	7
168	5	1	1	1	0	1	5	8	9	9	10	11	10	6	5	6	5
169	4	1	1	1	0	1	3	5	7	7	8	8	8	4	5	5	4
170	3	1	1	1	0	1	1	4	5	6	6	7	6	4	4	4	3
171	2	1	1	1	0	1	1	3	4	4	5	5	5	3	3	3	2
172	1	1	1	1	0	1	1	1	3	3	4	4	4	3	2	2	1
173	1	1	1	1	0	1	1	1	2	2	2	3	2	2	2	1	1
174	1	1	1	0	0	1	1	1	1	2	2	2	2	1	1	1	1
175	0	0	0	0	0	1	1	1	1	1	1	1	1	0	1	1	0
176	1	0	0	0	0	0	1	1	0	1	0	0	0	0	1	1	1
177	0	1	0	0	0	1	1	1	1	1	0	0	0	1	0	1	0
178	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	0	0
179	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	1	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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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 \*\*\*\*\***