LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest HighwayCary, IL60013

LED Luminaires

Model name(s): LED-8038E30C-A

Representative (Tested) Model: LED-8038E30C-A

Model Different: N/A

Test & 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.

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8038E30C-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	14W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-AQ1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo

1.2 Test Specifications:

Date of Receipt	Jan 16,2017
Date of Test	Jan 17,2017
Test item	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	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 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

1.3 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° C ± 1° 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° 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 25º C ± 1º 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 25º C ± 1º 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-8038E30C-A		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-AQ1	277.0	60	0.0503	12.90	0.9257
	347.0	60	0.0411	13.13	0.9200

Chromaticity Measurement - Sphere-Spectroradiometer Method :

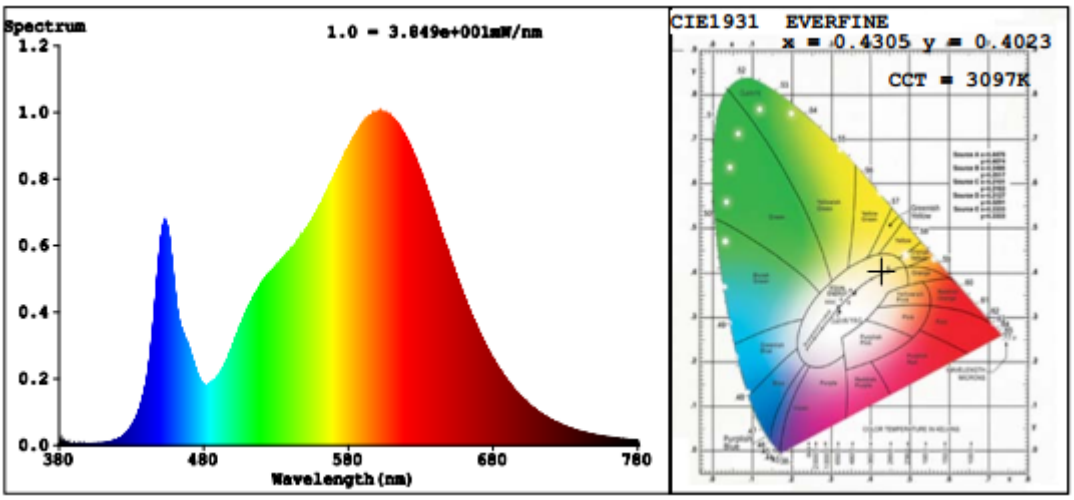
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	3097
Duv	0.0002
Chromaticity (x, y)	x=0.4305 y=0.4023
Chromaticity (u', v')	u'=0.2472 v'=0.5197
Color Rendering Index (CRI)	81.5
R9	4

Special Color Rendering Indices			
R1	80	R9	4
R2	90	R10	76
R3	96	R11	77
R4	79	R12	64
R5	79	R13	82
R6	87	R14	98
R7	83	R15	73
R8	58	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	1789.4	1848.7
Luminous Efficacy (lm/W)	138.71	140.80
Beam Angle (°)	275.5	--
Center Beam Candle Power (cd)	75	--

Spectral Power Distribution & Chromaticity Diagram

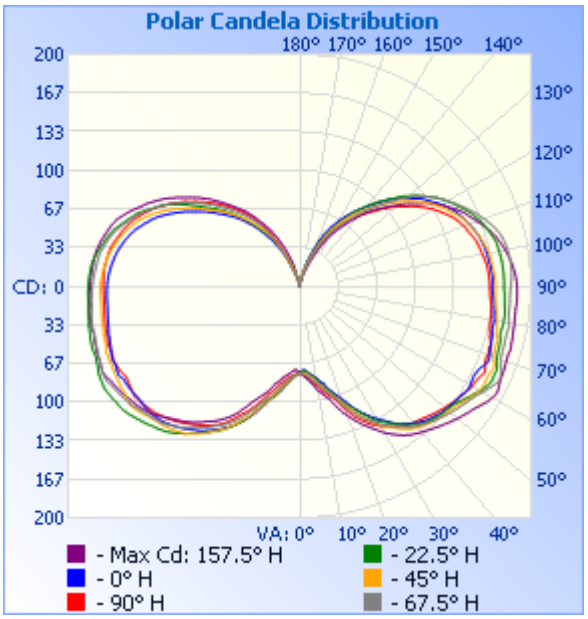


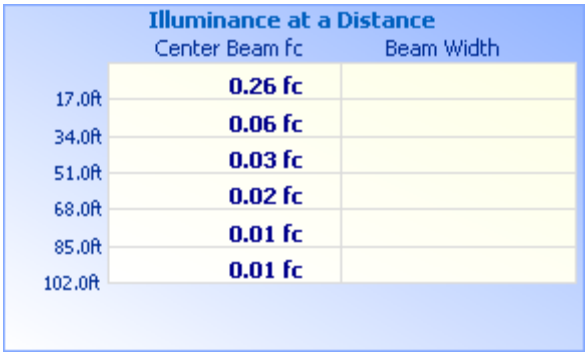
Zonal Lumen Tabulation

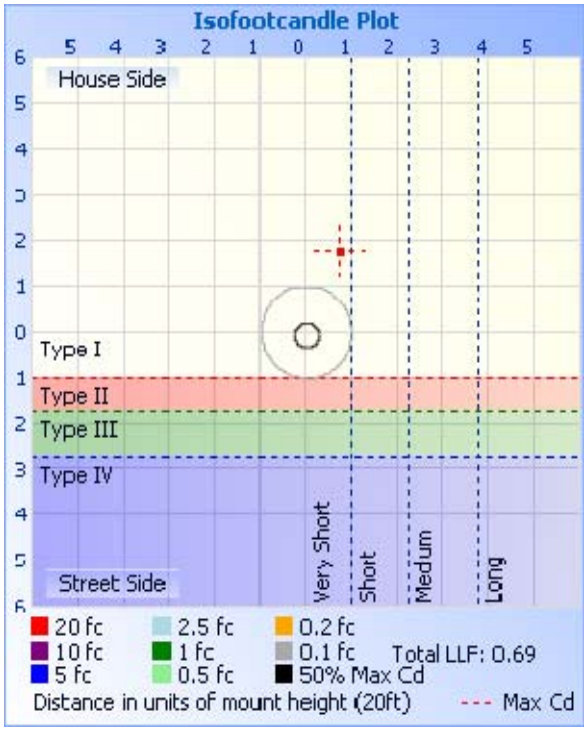
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	94.1	5.3%
0-40	187.9	10.5%
0-60	471.9	26.4%
60-90	557.2	31.1%
70-100	566.8	31.7%
90-120	510.4	28.5%
0-90	1,029.1	57.5%
90-180	760.3	42.5%
0-180	1,789.5	100%

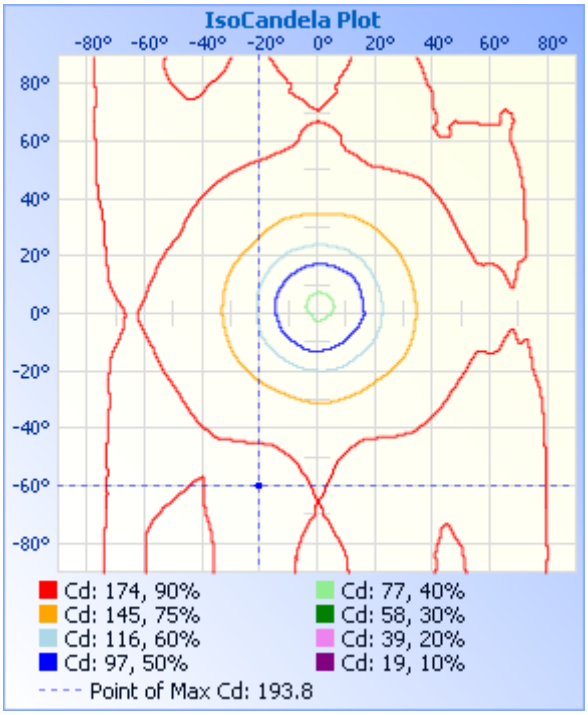
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	7.7	0.4%	90-100	188.2	10.5%
10-20	27.9	1.6%	100-110	174.5	9.8%
20-30	58.4	3.3%	110-120	147.7	8.3%
30-40	93.8	5.2%	120-130	111.9	6.3%
40-50	127.4	7.1%	130-140	74.6	4.2%
50-60	156.7	8.8%	140-150	42.8	2.4%
60-70	178.6	10.0%	150-160	17.3	1%
70-80	187.9	10.5%	160-170	3.2	0.2%
80-90	190.7	10.7%	170-180	0.1	0%

Photometric Data









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	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
1	73	74	75	75	76	76	76	76	76	76	76	76	75	75	74	73	73
2	73	74	75	76	77	77	77	76	77	77	77	77	76	75	74	73	73
3	72	73	75	76	78	78	78	78	78	78	78	77	76	75	73	72	72
4	73	74	75	77	79	79	79	79	80	79	79	78	77	76	74	73	73
5	74	75	76	78	80	80	81	81	81	80	80	80	78	77	75	74	74
6	75	76	77	79	81	82	82	83	83	82	82	81	79	77	76	75	75
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147	71	68	66	61	60	55	53	56	52	55	58	64	66	63	70	71	71
148	68	65	63	58	57	53	51	53	49	53	55	60	63	60	66	67	68
149	66	62	60	55	54	49	48	50	46	50	52	57	60	57	62	64	66
150	63	59	57	53	51	47	45	47	43	47	49	53	57	55	59	62	63
151	60	56	53	50	48	44	42	43	40	44	46	48	54	52	56	59	60
152	58	53	51	47	45	42	39	39	37	40	42	42	49	49	54	56	58
153	55	50	47	44	42	38	37	36	34	37	39	38	45	46	51	53	55
154	51	46	45	41	39	35	33	32	31	33	35	31	39	43	47	50	51
155	48	44	42	37	36	32	31	29	28	30	32	26	34	40	45	47	48
156	45	40	38	33	33	28	28	26	25	27	28	22	30	37	41	44	45

157	42	37	34	31	30	26	25	23	23	24	26	19	25	34	38	41	42
158	38	34	30	27	27	23	21	20	21	21	22	14	22	31	35	37	38
159	34	30	27	24	23	21	20	18	19	19	19	10	19	28	31	33	34
160	31	27	25	22	20	18	17	16	16	16	16	8	16	26	29	30	31
161	27	24	22	19	18	16	14	14	14	14	13	6	14	23	26	27	27
162	24	22	20	16	16	15	12	12	11	13	12	5	12	20	23	24	24
163	22	19	18	13	14	13	11	9	9	11	9	3	11	19	21	22	22
164	19	17	15	11	12	11	10	8	8	9	8	3	9	16	16	18	19
165	16	15	13	10	10	8	7	6	6	7	6	2	7	13	13	14	16
166	12	13	11	8	8	7	6	5	5	5	4	2	5	10	9	7	12
167	10	11	9	7	6	6	5	4	4	4	3	1	3	7	5	2	10
168	7	7	8	6	5	5	4	3	3	3	3	1	2	6	2	1	7
169	4	3	6	5	4	4	2	2	2	3	2	1	3	5	1	1	4
170	3	3	5	3	3	3	2	1	1	2	1	0	2	2	1	1	3
171	2	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1	2
172	2	3	3	2	1	1	1	1	1	1	1	0	0	1	1	1	2
173	3	2	2	1	1	1	1	1	1	1	1	0	0	1	1	2	3
174	2	1	1	1	0	1	0	0	0	1	0	0	0	1	2	1	2
175	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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 ********