LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest HighwayCary, IL60013

LED Luminaires

Model name(s): LED-8038E40C-A

Representative (Tested) Model: LED-8038E40C-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-8038E40C-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	4000K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-AR1	
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-8038E40C-A		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-AR1	277.0	60	0.0557	13.93	0.9028
	347.0	60	0.0444	13.88	0.9000

Chromaticity Measurement - Sphere-Spectroradiometer Method :

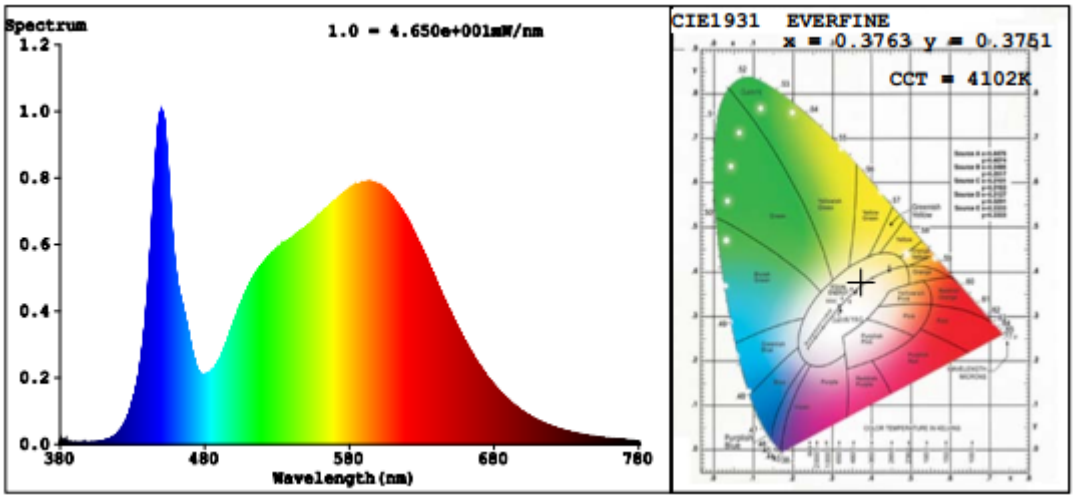
Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
CCT (K)	4102
Duv	0.0005
Chromaticity (x, y)	x=0.3763 y=0.3751
Chromaticity (u', v')	u'=0.2230 v'=0.5002
Color Rendering Index (CRI)	81.9
R9	6

Special Color Rendering Indices			
R1	80	R9	6
R2	88	R10	70
R3	93	R11	80
R4	81	R12	58
R5	80	R13	82
R6	83	R14	96
R7	86	R15	74
R8	64	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	2037.3	1992.4
Luminous Efficacy (lm/W)	146.25	143.54
Beam Angle (°)	270.7	--
Center Beam Candle Power (cd)	84	--

Spectral Power Distribution & Chromaticity Diagram

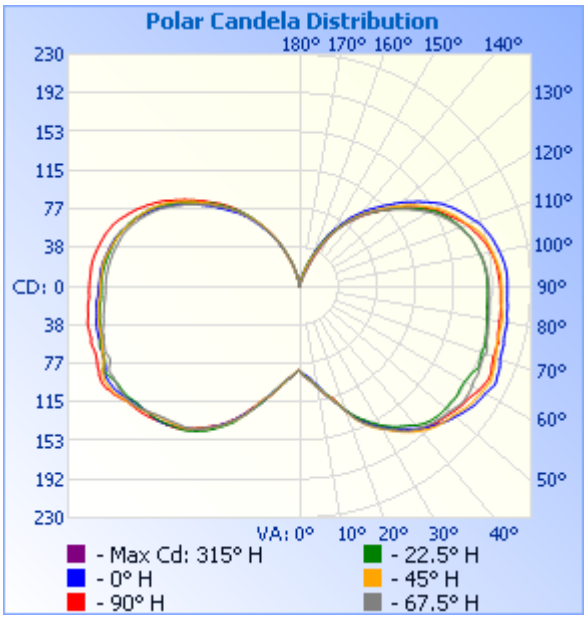


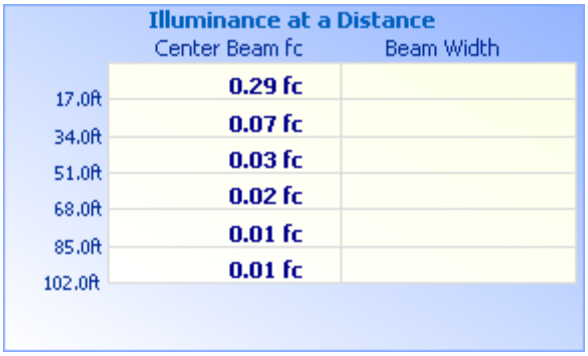
Zonal Lumen Tabulation

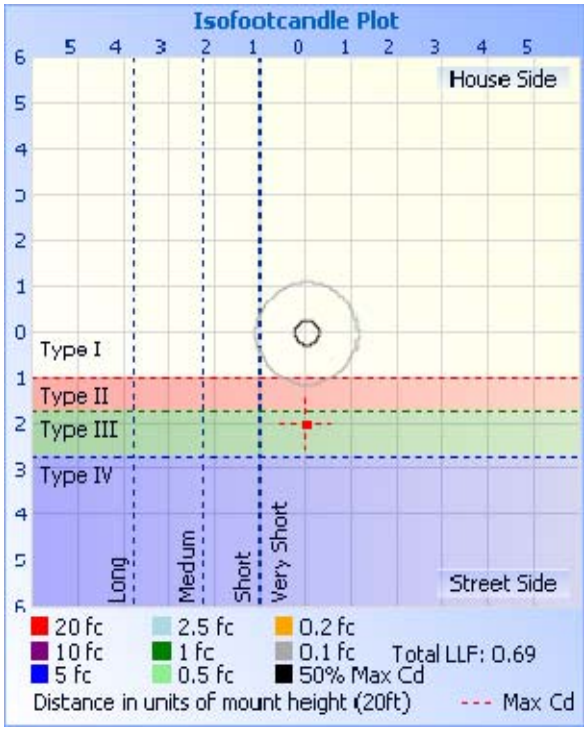
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	109.1	5.4%
0-40	217.8	10.7%
0-60	545.3	26.8%
60-90	634.0	31.1%
70-100	641.8	31.5%
90-120	575.0	28.2%
0-90	1,179.3	57.9%
90-180	858.2	42.1%
0-180	2,037.5	100%

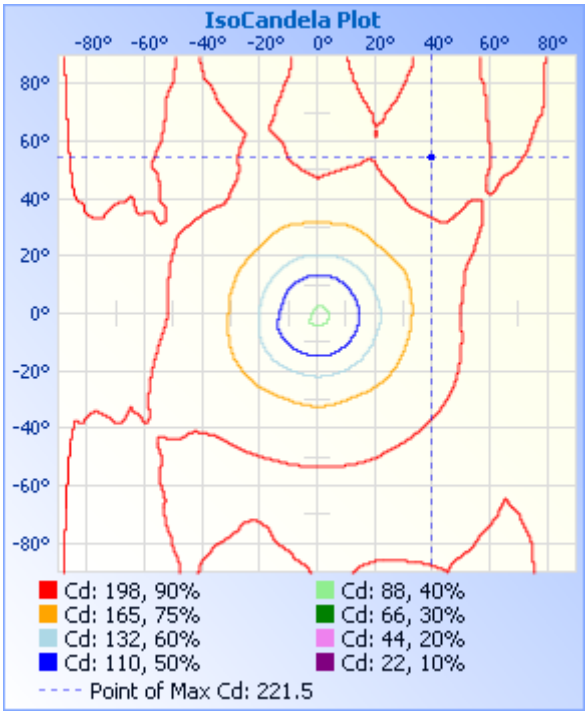
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	8.9	0.4%	90-100	212.2	10.4%
10-20	32.4	1.6%	100-110	196.4	9.6%
20-30	67.8	3.3%	110-120	166.5	8.2%
30-40	108.7	5.3%	120-130	126.1	6.2%
40-50	147.3	7.2%	130-140	84.8	4.2%
50-60	180.2	8.8%	140-150	48.8	2.4%
60-70	204.3	10.0%	150-160	19.7	1%
70-80	213.8	10.5%	160-170	3.6	0.2%
80-90	215.9	10.6%	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
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1	85	86	86	87	87	84	84	83	84	84	83	84	84	84	84	84	85
2	87	88	88	88	88	85	85	85	85	85	85	85	85	85	86	86	87
3	88	89	90	90	90	87	86	86	86	86	86	87	87	87	88	88	88
4	89	90	91	91	91	88	88	88	88	88	88	88	88	88	89	88	89
5	90	92	92	92	92	90	89	89	90	90	90	90	90	89	90	89	90
6	92	93	94	94	94	91	90	91	91	91	91	91	92	91	91	91	92
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147	70	67	66	64	66	70	72	72	72	75	75	73	75	69	71	68	70
148	67	64	63	61	63	66	68	69	68	71	71	70	71	65	67	64	67
149	64	61	60	56	58	62	65	67	65	68	68	66	68	63	64	61	64
150	61	58	56	52	52	59	62	63	62	64	64	63	65	59	61	57	61
151	58	55	52	48	48	55	59	60	59	61	61	59	61	56	57	54	58
152	53	50	48	44	41	52	55	56	55	57	57	56	58	53	54	51	53
153	49	46	43	39	38	49	52	53	52	55	54	53	54	50	50	47	49
154	45	43	40	35	33	45	47	50	48	51	50	51	51	46	46	44	45
155	41	39	36	28	27	43	44	45	44	47	46	47	47	43	42	40	41
156	38	36	33	24	23	39	39	41	41	43	43	44	43	39	38	37	38
157	34	32	30	18	18	36	35	36	37	39	37	39	39	36	35	33	34

158	30	29	26	13	16	32	32	34	33	36	33	36	35	32	32	30	30
159	27	26	24	10	14	28	29	30	30	32	29	31	31	28	29	27	27
160	23	24	21	6	11	25	26	28	27	29	25	28	28	26	26	23	23
161	20	21	18	4	10	21	23	24	24	26	22	25	25	23	23	20	20
162	18	18	15	3	9	18	21	22	22	24	20	23	23	21	20	18	18
163	16	16	11	3	8	15	17	19	19	20	18	19	21	19	17	15	16
164	14	14	9	2	7	13	14	15	16	17	16	17	18	16	15	13	14
165	11	11	6	2	3	11	11	10	14	15	14	15	16	13	12	11	11
166	8	9	6	1	2	9	7	4	11	13	12	13	12	10	10	9	8
167	6	7	5	1	2	7	4	1	8	11	9	11	10	8	9	8	6
168	5	5	3	1	1	5	2	1	5	8	7	9	8	7	7	6	5
169	4	4	2	1	0	2	1	1	4	4	6	7	7	5	5	4	4
170	3	3	2	1	0	1	2	1	3	4	5	5	5	3	4	2	3
171	2	2	1	1	0	1	2	0	1	4	4	4	4	2	2	2	2
172	1	2	1	1	0	1	1	1	2	3	3	3	3	1	2	2	1
173	1	1	1	1	0	1	1	1	1	2	2	2	2	1	1	1	1
174	1	1	1	0	0	1	1	1	1	1	2	2	1	1	1	1	1
175	1	0	0	1	0	0	1	1	1	1	1	1	1	1	1	0	1
176	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0
177	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0
178	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
179	0	0	0	0	0	0	1	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 ********