LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN

(Brand Name:N/A)

188 S. Northwest HighwayCary, IL60013

LED Luminaires

Model name(s): LED-8038E40-A
LED-8038-CW-E27-A
Remark: The two models are the same product with two model names

Representative (Tested) Model: LED-8038E40-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-8038E40-A;LED-8038-CW-E27-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	14W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-AY1	
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 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° 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 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 25º C ± 1º 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.

2.1 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-8038E40-A		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-AY1	120.0	60	0.1152	13.54	0.9792
	277.0	60	0.0530	13.41	0.9138

Chromaticity Measurement - Sphere-Spectroradiometer Method :

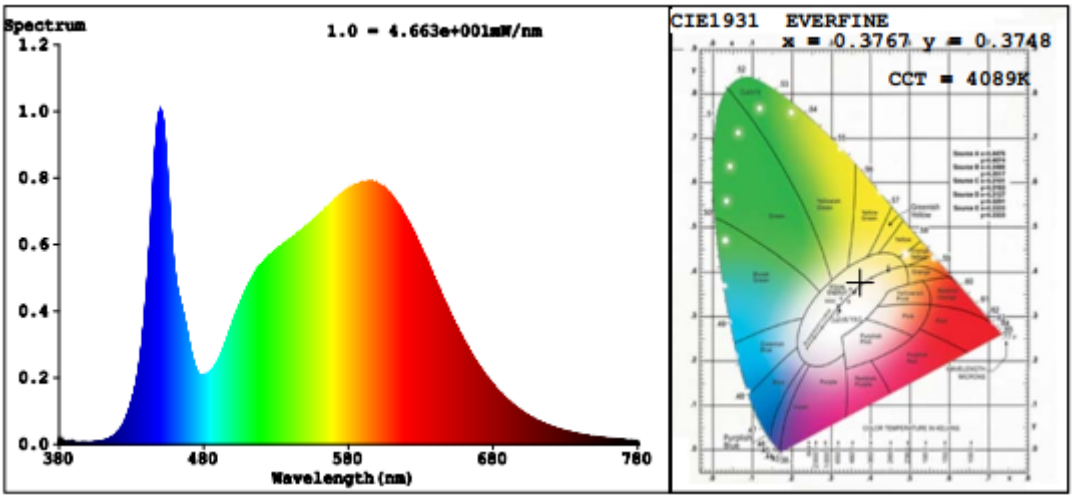
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	4089
Duv	0.0002
Chromaticity (x, y)	x=0.3767 y=0.3748
Chromaticity (u', v')	u'=0.2234 v'=0.5002
Color Rendering Index (CRI)	82.1
R9	7

Special Color Rendering Indices			
R1	81	R9	7
R2	88	R10	71
R3	93	R11	80
R4	82	R12	58
R5	80	R13	82
R6	83	R14	96
R7	86	R15	75
R8	65	--	--

Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	2064.8	1978.1
Luminous Efficacy (lm/W)	152.50	147.51
Beam Angle (°)	265.7	--
Center Beam Candle Power (cd)	86	--

Spectral Power Distribution & Chromaticity Diagram

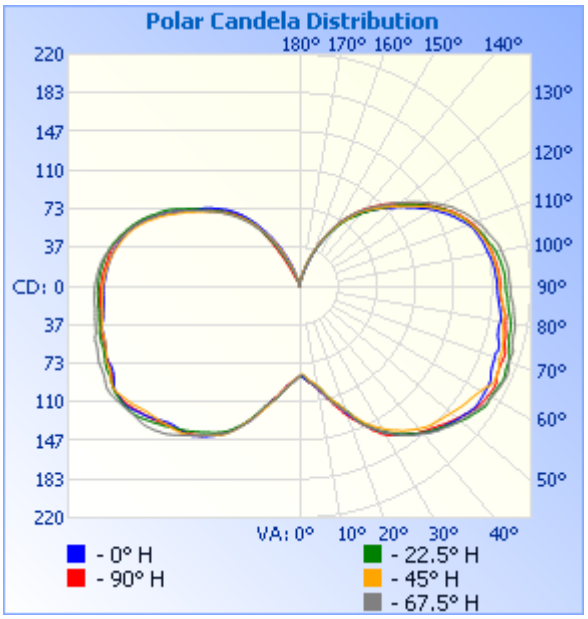


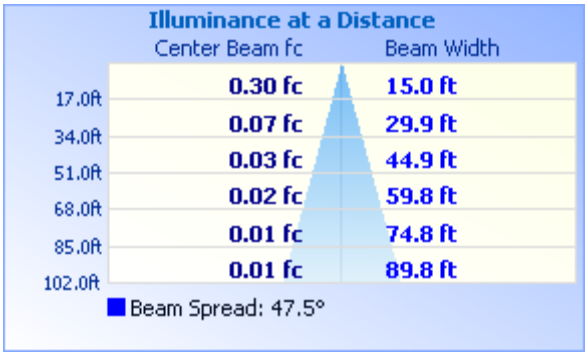
Zonal Lumen Tabulation

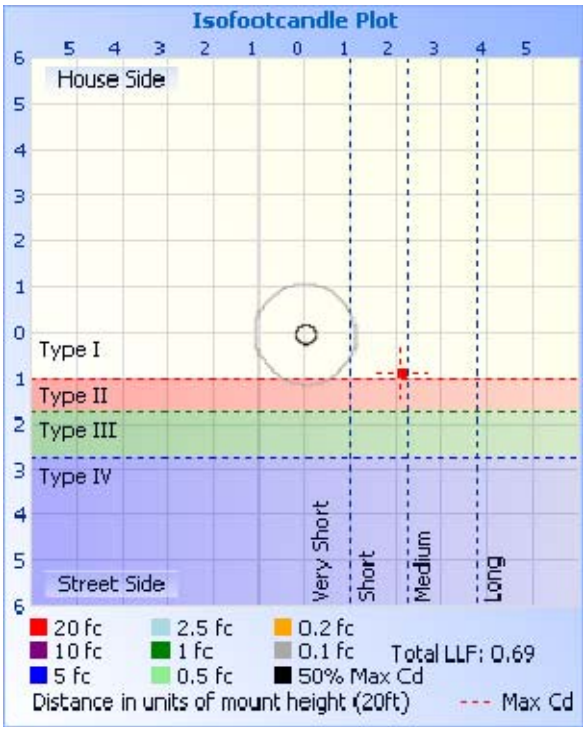
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	110.2	5.6%
0-40	217.4	11%
0-60	539.8	27.3%
60-90	623.7	31.5%
70-100	628.5	31.8%
90-120	553.4	28%
0-90	1,163.5	58.8%
90-180	814.8	41.2%
0-180	1,978.3	100%

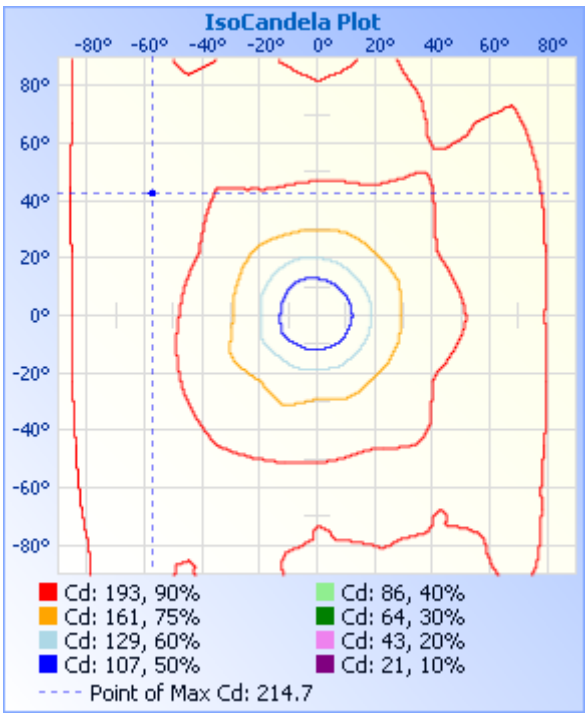
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	9.0	0.5%	90-100	206.5	10.4%
10-20	32.9	1.7%	100-110	189.0	9.6%
20-30	68.3	3.5%	110-120	157.8	8%
30-40	107.1	5.4%	120-130	117.2	5.9%
40-50	144.1	7.3%	130-140	79.3	4%
50-60	178.4	9.0%	140-150	45.4	2.3%
60-70	201.7	10.2%	150-160	16.4	0.8%
70-80	210.6	10.6%	160-170	2.9	0.1%
80-90	211.4	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
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1	86	85	84	85	85	86	86	86	87	87	87	87	86	87	87	86	86
2	87	85	84	84	86	86	87	87	88	88	88	89	88	88	88	87	87
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147	70	70	71	74	73	76	70	69	64	55	60	59	52	43	60	63	70
148	67	66	68	72	70	73	66	66	61	51	57	55	45	37	55	61	67
149	63	62	65	68	66	69	63	62	57	46	54	50	37	30	52	58	63
150	59	59	62	64	63	66	60	58	54	42	50	45	32	25	47	54	59
151	55	56	58	60	59	62	57	54	50	36	47	40	26	20	44	51	55
152	51	53	55	56	55	59	54	51	47	32	43	37	19	15	39	47	51
153	49	49	51	52	52	55	50	47	43	27	39	31	14	10	35	43	49
154	45	46	48	49	48	51	46	44	39	23	35	28	9	6	30	40	45
155	42	43	44	45	45	47	43	40	35	22	30	24	9	5	27	36	42

156	38	39	41	42	41	43	39	37	31	19	27	20	8	5	23	33	38
157	35	36	39	39	37	39	35	33	28	17	23	16	8	7	20	29	35
158	32	33	35	35	33	34	32	30	24	14	20	14	7	8	16	25	32
159	29	30	32	33	29	29	28	26	22	12	17	13	7	8	11	22	29
160	25	27	29	29	27	25	26	24	18	10	14	9	7	8	8	19	25
161	22	24	26	27	23	21	23	22	14	7	11	7	7	8	5	16	22
162	18	21	24	24	21	19	20	19	10	5	9	4	7	8	4	13	18
163	16	19	21	21	19	17	17	16	8	3	7	2	6	6	3	11	16
164	14	17	18	18	16	17	16	14	6	2	5	2	6	5	2	9	14
165	12	13	16	15	12	14	14	12	4	2	4	2	7	4	2	7	12
166	10	11	13	12	10	12	11	9	4	2	2	3	6	3	2	6	10
167	8	9	11	11	7	10	9	8	3	1	1	3	6	3	2	5	8
168	6	8	9	9	7	8	8	6	3	1	1	2	5	2	2	4	6
169	5	7	8	7	6	7	6	5	2	1	1	2	3	2	2	3	5
170	4	5	6	5	5	5	5	4	2	1	1	1	3	1	1	2	4
171	3	4	4	4	4	4	4	3	1	0	1	1	2	1	1	1	3
172	3	3	3	3	2	3	3	2	1	0	0	1	1	1	1	1	3
173	1	2	2	2	1	2	2	1	1	0	0	1	1	1	1	1	1
174	1	1	1	1	1	1	2	1	0	0	0	0	1	0	1	1	1
175	0	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	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	1	0	0	0	0	0	0	0	1	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 ********