LM-79-08 Test Report

For

LIGHT EFFICIENT DESIGN, LLC

(Brand Name: N/A)

188 S.Northwest Highway, Cary, IL60013, USA

LED Luminaires

Model name(s): LED-7320-35K-G2

Representative (Tested) Model: LED-7320-35K-G2

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Biao Zhong

Engineer: Biao Zhong

Date: Mar.23,2018

Review By:

Univ Xie

Manager: Univ Xie

Note: 1. The results contained in this report pertain only to the tested samples.

2. 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, LLC	
Brand Name	N/A	
Model Number	LED-7320-35K-G2	
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	11W	
Rated Initial Lamp Lumen	--	
Declared CCT	3500K	
LED Manufacturer	Everlight Electronics Co., LTD	
LED Model	67-21S/KK5C-H352433Z6-2T	
Sample Number	GZE1711047-H-B1	
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.03,2018
Date of Test	Jan.05,2018
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 25 ºC ±1 ºC. 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 25 ºC ±1 ºC. 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	2018-01-05	Test Ambient:	25.2 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-7320-35K-G2		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE171104 7-H-B1	120.0	60	0.1021	10.72	0.8747	42.76
	277.0	60	0.0473	10.54	0.8053	67.13

Chromaticity Measurement - Sphere-Spectroradiometer Method:

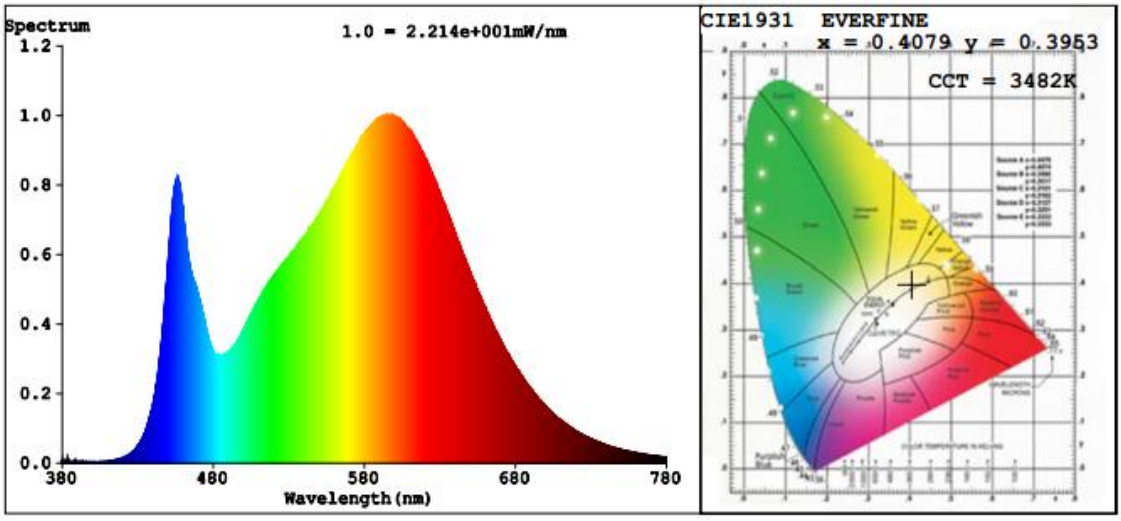
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3482
Duv	0.0014
Chromaticity (x, y)	x=0.4079 y=0.3953
Chromaticity (u', v')	u'=0.2355 v'=0.5135
Color Rendering Index (CRI)	81.9
R9	6

Special Color Rendering Indices			
R1	80	R9	6
R2	92	R10	80
R3	95	R11	75
R4	77	R12	63
R5	80	R13	83
R6	88	R14	98
R7	83	R15	74
R8	60	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	1514.4	1426.2
Luminous Efficacy (lm/W)	141.27	135.31
Beam Angle ( )	280.0	--
Center Beam Candle Power (cd)	9	--

Spectral Power Distribution & Chromaticity Diagram

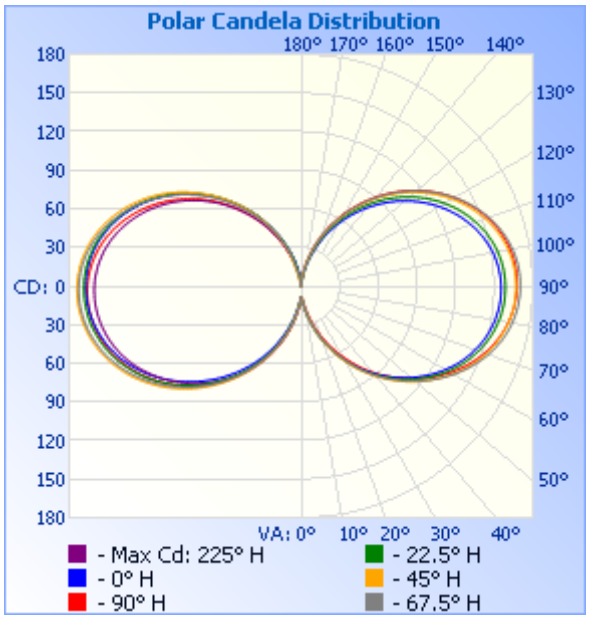


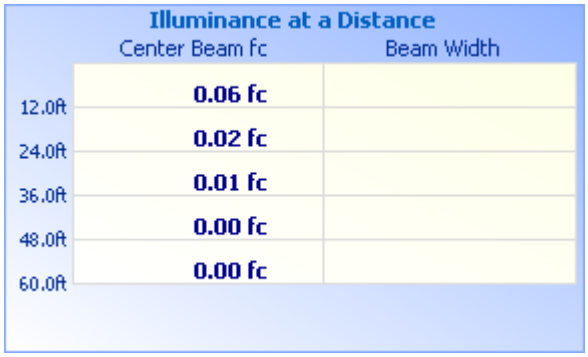
Zonal Lumen Tabulation

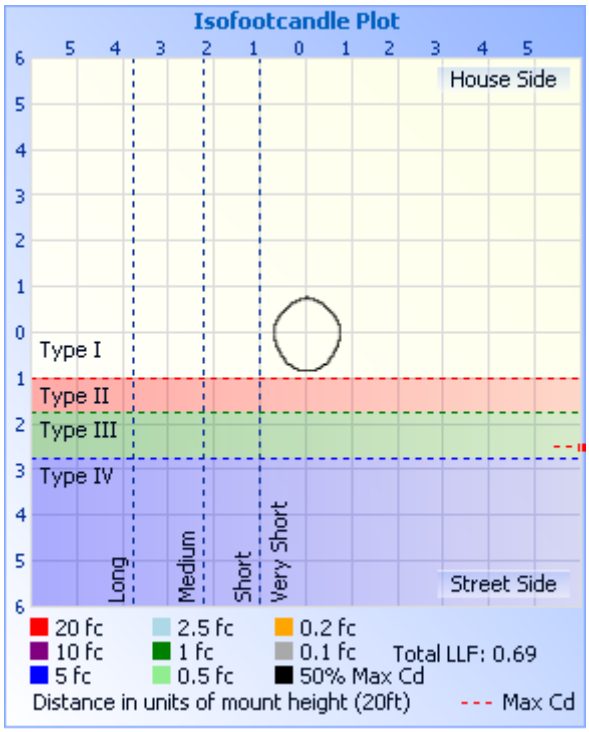
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	36.5	2.4%
0-40	87.2	5.8%
0-60	281.6	18.6%
60-90	490.4	32.4%
70-100	525.3	34.7%
90-120	484.5	32%
0-90	772.0	51%
90-180	742.7	49%
0-180	1,514.7	100%

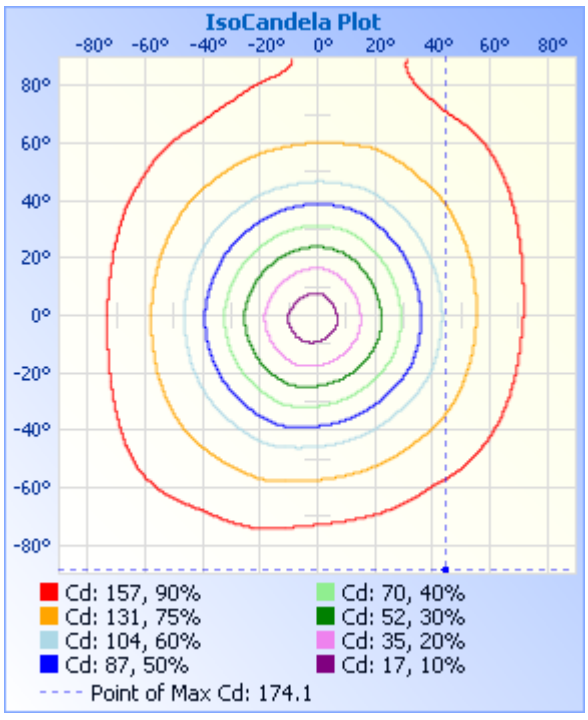
Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	% Total
0-10	1.4	0.1%	90-100	178.8	11.8%
10-20	9.2	0.6%	100-110	165.2	10.9%
20-30	25.9	1.7%	110-120	140.6	9.3%
30-40	50.6	3.3%	120-130	109.2	7.2%
40-50	80.9	5.3%	130-140	75.8	5%
50-60	113.5	7.5%	140-150	45.3	3%
60-70	143.9	9.5%	150-160	21.4	1.4%
70-80	167.1	11.0%	160-170	6.1	0.4%
80-90	179.4	11.8%	170-180	0.3	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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145	67	71	75	76	77	78	77	74	73	73	73	70	66	66	66	64	67
146	65	68	72	73	74	76	75	72	70	70	70	68	64	64	63	61	65
147	62	66	70	71	72	73	72	69	67	67	67	65	61	61	61	59	62
148	60	63	67	68	69	70	69	67	65	64	64	62	58	58	58	57	60
149	57	61	64	65	66	67	67	64	62	62	61	60	56	56	55	54	57
150	55	58	62	63	64	65	64	62	59	59	59	57	53	53	53	52	55
151	52	56	59	60	61	62	61	59	57	56	56	54	50	51	50	49	52
152	50	53	56	57	58	59	59	56	54	54	53	52	48	48	48	47	50
153	47	50	54	55	56	57	56	54	51	51	50	49	45	45	45	44	47
154	45	48	51	52	53	54	53	51	49	48	48	46	43	43	43	42	45
155	42	45	48	49	50	51	51	49	46	46	45	44	40	40	40	40	42
156	40	43	46	47	48	48	48	46	44	43	41	41	37	38	37	37	40

157	37	40	43	44	45	46	45	44	41	40	38	39	35	35	35	35	37
158	35	38	40	42	42	43	43	41	38	38	35	36	32	32	32	32	35
159	32	35	38	39	40	40	40	39	36	35	33	34	30	30	30	30	32
160	30	33	35	36	37	38	38	36	34	33	29	31	27	27	28	28	30
161	28	30	33	34	35	35	35	34	31	30	25	28	25	25	25	26	28
162	25	28	30	31	32	32	32	31	29	28	21	26	23	23	23	23	25
163	23	25	28	29	30	30	30	29	27	25	16	23	20	20	21	21	23
164	21	23	25	26	27	27	27	26	24	23	12	20	18	18	18	19	21
165	19	21	23	24	25	25	25	24	22	21	6	16	16	16	16	17	19
166	16	18	20	22	22	22	23	22	20	18	1	12	14	14	14	15	16
167	14	16	18	19	20	20	20	19	18	15	0	11	12	12	12	13	14
168	12	14	16	17	18	18	18	17	16	13	0	10	10	10	10	11	12
169	10	12	14	15	15	15	15	15	13	10	0	9	8	8	8	9	10
170	9	10	12	12	13	13	13	13	11	7	0	7	6	6	6	8	9
171	7	8	9	9	10	10	11	10	10	6	1	5	5	4	5	6	7
172	5	6	5	6	7	7	8	8	8	6	1	3	3	3	2	4	5
173	4	3	2	4	4	5	5	6	6	5	1	1	2	2	0	3	4
174	1	0	0	2	2	3	3	1	4	4	0	0	1	0	0	0	1
175	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
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	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06
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 ********