

Project Number
20.00291



HUBBELL
Lighting

Date
3/5/2020

Photometric Test Report

Lab 5
Sphere

Test Sample Description

Catalog Number: P560137-031-30
Description: Black Z-1090 Medium Wall Lantern with AC LED Module

Photometry

Test Method: IES LM-46-04
IES LM-79-08 §10

Preburn Time: 0:10

Time To Stabilize: 0:48

Total Operating Time: 2:17

Input Voltage (Volts): 120.3

Input Current (Amps): 0.079

Input Wattage (Watts): 9.4

Ambient Temp (°C): 26

PF @ 120V: 0.988

THD @ 120V (%): 12.39

Sphere

Test Method: IES LM-16-93
IES LM-79-08 §12.1

Preburn Time: 1:00

Time To Stabilize: 1:04

Total Operating Time: 2:04

Input Voltage (Volts): 120.0

Input Current (Amps): 0.078

Input Wattage (Watts): 9.3

Ambient Temp (°C): 24



Hubbell Lighting, Inc.

701 Millennium Boulevard
Greenville, SC 29607
www.hubbelllighting.com

Checked (sphere): B. LEE
Checked (photometry): M. OLALDE / D. ROBBINS
Approved: P. McCARTHY



* This customer-provided information was not verified by the laboratory. Note that LED manufacturer and part # are unverifiable by the lab.

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Lamp Cat#: 93070270-3330

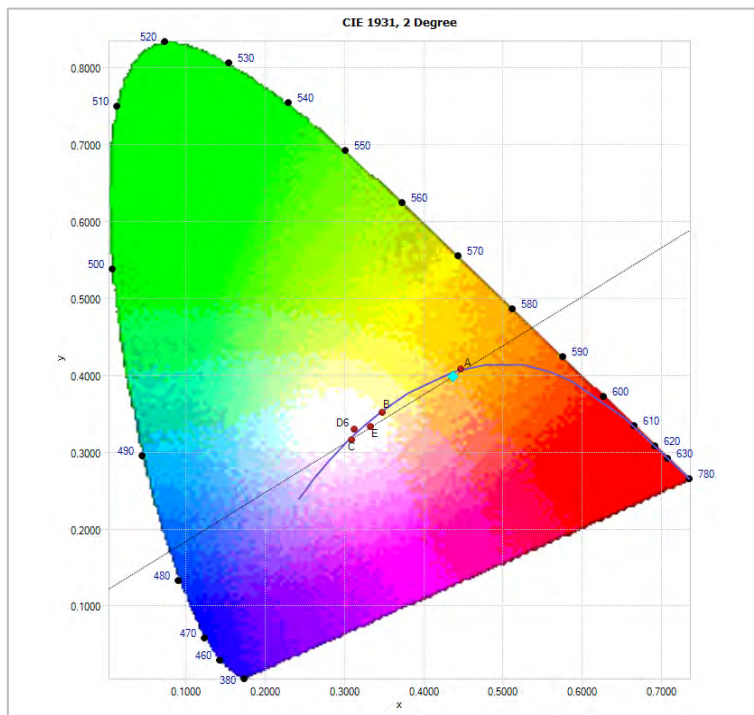
Lamp Desc: 20 - Nichia 3000K LEDs

Efficacy: 25.8 LPW

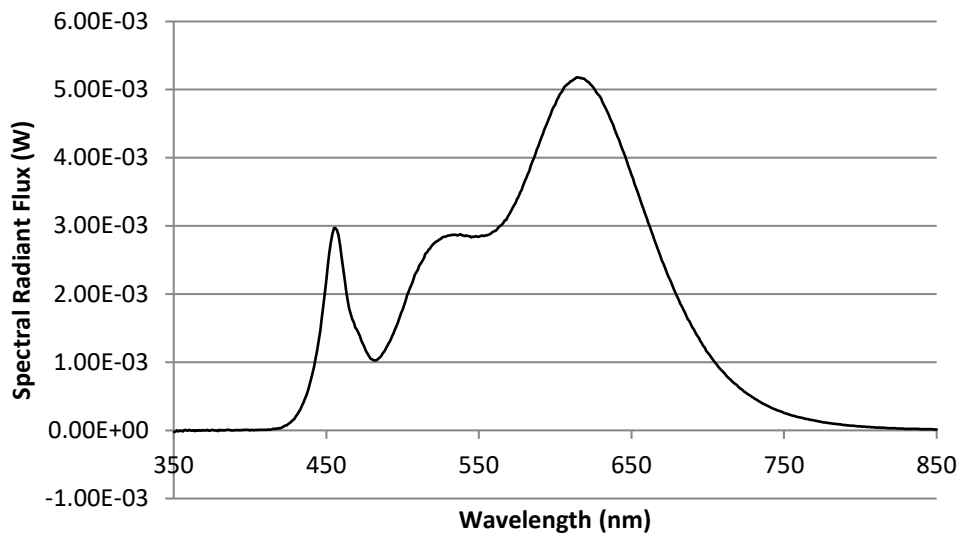
S/P Ratio: 1.5 LM'/LM

Spectral Results

Name	Value	Unit
Φ	0.80	watts
$\Phi(v)$	240	lumens
$\Phi(v')$	349	lm'
Chrom x	0.4367	
Chrom y	0.399	
Chrom u	0.2526	
Chrom v	0.3462	
Duv	0.0022	
Chrom u'	0.2526	
Chrom v'	0.5193	
CCT	2960	K
Purity	50.8	%
λ (dom)	583.7	nm
FWHM	153.3	nm
λ (peak)	614.7	nm
λ (center)	591.8	nm
λ (centroid)	589.1	nm
SDCM	Cool White	
RA	95	
Corr. Coef.	0.001997743	
Correlation	0.0054	
R1	97.9	
R2	99.1	
R3	97.8	
R4	98.2	
R5	98.2	
R6	94.2	
R7	90.2	
R8	81.1	
R9	58.9	
R10	99.1	
R11	95.2	
R12	83.7	
R13	99.3	
R14	99.4	



Spectral Distribution of Radiant Flux



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LUMINAIRE: Z-1090 LED Black One-Light Medium Wall Lantern

LAMP CAT. NO.: 93070270-3330

LAMP: 20- Nichia 3000k LEDs

MOUNTING: wall

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0	FLUX
0	148	148	148	148	148	
5	136	118	142	117	135	12
15	161	170	163	168	159	42
25	129	148	131	144	118	58
35	86	95	86	88	72	51
45	53	50	52	44	39	35
55	23	22	26	15	9	17
65	2	4	3	3	3	4
75	1	1	1	0	1	1
85	1	1	0	0	1	0
90	0	0	0	0	0	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	112	51.1
0- 40	163	74.4
0- 60	215	97.9
0- 90	220	100.0
90-180	0	0.0
0-180	220	100.0

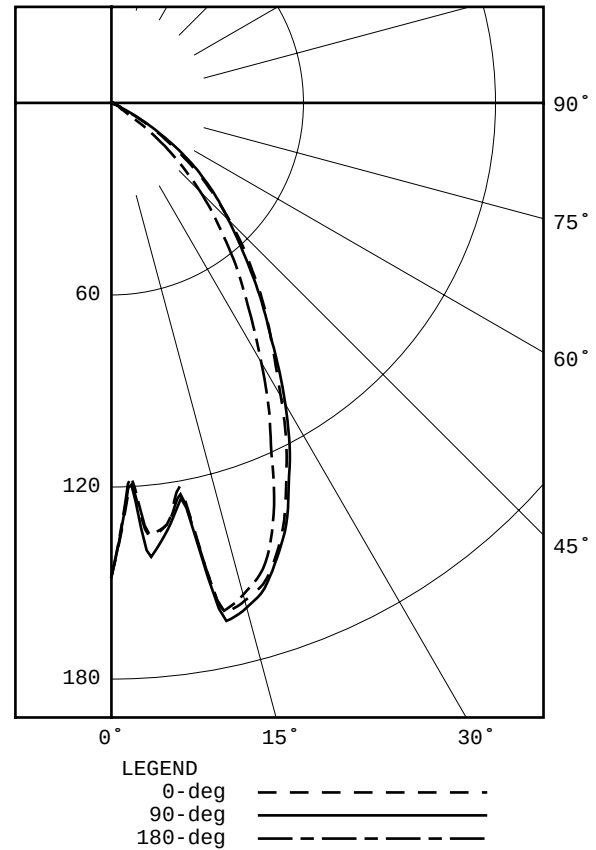
EFFICACY = 23.5 lm/W

CIE TYPE - DIRECT

PLANE	: 0-DEG	90-DEG	180-DEG
SPACING CRITERIA	: 1.11	1.13	1.04
SHIELDING ANGLES	: 90	90	
LUMINOUS LENGTH	: 3.250	3.250	

LUMINANCE DATA IN CANDELA/SQ M

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 90-DEG	AVERAGE 180-DEG
45	10937.	10709.	8177.
55	5808.	6550.	2405.
65	764.	1111.	1111.
75	340.	567.	340.
85	842.	673.	1010.





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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	5.0	10.0	15.0	20.0	22.5	25.0	30.0	35.0	40.0	45.0
0.0	148	148	148	148	148	148	148	148	148	148	148
2.5	122	122	120	120	118	117	116	115	112	112	111
5.0	136	135	133	129	125	123	122	119	118	117	118
7.5	133	132	130	125	121	121	123	127	134	139	143
10.0	122	121	116	112	113	117	122	136	146	148	143
12.5	163	161	153	144	138	140	145	157	160	160	162
15.0	161	159	152	144	140	143	149	163	166	167	170
17.5	158	156	149	141	137	140	146	159	163	164	167
20.0	150	149	142	135	132	135	141	154	157	159	161
22.5	141	139	133	127	125	127	134	147	152	153	155
25.0	129	128	122	117	115	118	125	138	142	145	148
27.5	118	116	111	106	105	108	114	127	132	134	137
30.0	106	104	100	95	95	97	103	116	120	121	124
32.5	95	95	90	85	84	87	93	104	107	108	110
35.0	86	84	80	75	75	77	82	91	94	94	95
37.5	77	76	73	68	68	69	74	81	82	80	82
40.0	69	68	65	61	60	62	65	70	70	68	70
42.5	61	60	57	53	52	53	56	61	60	59	59
45.0	53	52	49	46	45	46	48	52	52	50	50
47.5	45	45	42	39	38	38	40	43	43	42	42
50.0	38	37	34	32	30	31	32	35	35	34	34
52.5	30	29	28	25	24	25	26	27	28	27	28
55.0	23	23	21	19	18	18	19	21	20	20	22
57.5	17	17	16	14	13	13	14	15	15	15	16
60.0	11	10	10	10	9	9	10	10	10	10	12
62.5	5	5	5	5	5	5	6	7	7	7	7
65.0	2	2	2	2	3	2	3	3	4	4	4
67.5	1	2	1	1	1	1	1	1	1	2	2
70.0	1	1	1	1	1	0	0	1	1	1	1
72.5	1	1	1	0	1	1	0	1	1	1	1
75.0	1	1	0	0	1	0	0	1	0	0	1
77.5	0	0	0	0	1	0	0	0	0	0	0
80.0	0	1	0	0	1	0	0	1	0	0	0
82.5	1	1	0	0	1	0	0	1	0	0	0
85.0	1	1	0	0	1	0	0	1	0	0	1
87.5	0	0	0	0	0	0	0	1	0	0	0
90.0	0	0	0	0	0	0	0	0	0	0	0



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CANDELA DISTRIBUTION
LATERAL ANGLE

	50.0	55.0	60.0	65.0	67.5	70.0	75.0	80.0	85.0	90.0	95.0
0.0	148	148	148	148	148	148	148	148	148	148	148
2.5	111	110	110	113	114	117	117	119	120	120	119
5.0	118	116	119	123	125	127	133	138	142	142	140
7.5	144	142	137	131	130	128	129	131	132	135	134
10.0	135	130	125	118	114	112	112	115	121	125	123
12.5	161	155	147	143	141	142	147	154	162	166	162
15.0	169	160	151	146	144	144	147	152	159	163	160
17.5	165	157	147	143	141	141	144	148	155	159	157
20.0	160	152	142	137	135	135	137	141	147	151	149
22.5	154	146	136	130	129	128	130	134	139	143	141
25.0	146	139	128	122	120	118	120	123	128	131	129
27.5	136	130	118	112	110	108	110	112	118	121	119
30.0	125	118	108	102	100	98	100	102	107	109	107
32.5	109	105	98	92	90	88	88	91	95	97	95
35.0	95	92	85	80	79	77	77	79	83	86	84
37.5	83	79	74	71	70	68	69	71	74	76	74
40.0	71	68	63	62	62	60	61	63	65	67	65
42.5	59	58	54	52	53	52	53	55	58	59	58
45.0	51	49	46	44	45	45	47	49	51	52	51
47.5	43	41	38	38	38	39	40	42	45	46	44
50.0	35	34	32	31	32	33	34	36	38	39	38
52.5	29	27	26	26	26	27	29	31	32	33	32
55.0	23	22	20	20	21	21	23	24	25	26	26
57.5	17	17	15	15	15	16	17	18	19	19	19
60.0	13	12	11	10	10	11	12	13	13	13	13
62.5	8	8	7	6	6	7	7	7	7	7	7
65.0	4	4	4	3	3	4	3	3	4	3	3
67.5	2	2	2	2	1	2	1	2	2	2	2
70.0	1	1	2	1	1	1	1	2	2	2	2
72.5	1	1	1	1	1	1	1	1	2	2	2
75.0	1	1	1	1	1	1	1	1	2	1	1
77.5	0	0	1	0	0	1	0	1	1	1	1
80.0	0	0	1	0	0	0	0	1	1	0	1
82.5	0	0	1	1	0	1	0	1	1	0	0
85.0	0	0	1	1	0	1	1	0	1	0	0
87.5	0	0	0	0	0	0	0	0	0	0	0
90.0	0	0	0	0	0	0	0	0	0	0	0



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	100.0	105.0	110.0	112.5	115.0	120.0	125.0	130.0	135.0	140.0	145.0
0.0	148	148	148	148	148	148	148	148	148	148	148
2.5	119	116	115	113	112	111	108	108	107	109	112
5.0	136	132	127	124	124	121	117	119	117	119	118
7.5	131	130	129	129	131	136	140	141	140	137	134
10.0	115	112	113	116	120	126	132	138	143	146	145
12.5	154	147	140	140	143	148	153	159	161	160	160
15.0	153	147	142	142	145	150	158	165	168	166	165
17.5	149	143	139	139	141	147	155	162	164	162	161
20.0	142	136	132	133	135	142	150	157	159	157	156
22.5	134	129	125	126	129	136	144	151	153	151	149
25.0	124	118	116	117	120	127	135	142	144	141	138
27.5	113	108	106	108	109	117	126	132	133	130	125
30.0	101	98	96	97	100	106	114	119	118	115	112
32.5	91	86	85	87	89	95	100	103	103	101	98
35.0	79	75	74	76	78	83	87	89	88	86	85
37.5	70	67	65	66	68	72	74	76	75	74	74
40.0	62	58	57	57	58	61	62	63	63	63	63
42.5	54	50	49	49	49	51	52	54	54	54	53
45.0	47	44	41	41	41	42	43	44	44	44	44
47.5	41	38	35	35	34	35	35	36	36	35	35
50.0	35	32	29	28	27	27	28	29	28	27	28
52.5	29	27	24	23	22	22	22	22	21	21	21
55.0	24	21	19	18	17	17	17	16	15	15	14
57.5	17	16	14	13	12	12	12	12	10	10	9
60.0	12	11	10	10	9	9	9	8	7	6	6
62.5	7	7	6	6	6	6	6	5	4	4	3
65.0	4	3	3	4	3	3	4	4	3	3	2
67.5	2	2	1	2	1	1	2	2	1	2	2
70.0	2	1	1	1	1	1	1	1	1	2	1
72.5	2	1	1	1	1	1	1	1	1	1	1
75.0	2	1	1	1	0	0	1	0	0	1	1
77.5	1	0	0	1	0	0	0	0	0	1	0
80.0	1	0	0	0	0	0	0	0	0	0	0
82.5	1	0	0	1	0	0	0	0	0	1	0
85.0	1	0	0	1	0	0	1	0	0	1	0
87.5	0	0	0	0	0	0	0	0	0	0	0
90.0	0	0	0	0	0	0	0	0	0	0	0



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**CANDELA DISTRIBUTION
LATERAL ANGLE**

	150.0	155.0	157.5	160.0	165.0	170.0	175.0	180.0
0.0	148	148	148	148	148	148	148	148
2.5	113	114	114	116	116	118	119	119
5.0	119	121	123	124	128	131	134	135
7.5	130	124	122	123	126	130	132	133
10.0	136	124	118	115	114	117	120	124
12.5	154	144	139	139	143	152	160	163
15.0	158	146	141	139	142	150	157	159
17.5	155	142	137	136	138	146	153	154
20.0	149	136	131	128	131	137	143	146
22.5	141	127	122	119	120	126	131	133
25.0	129	115	109	106	106	112	117	118
27.5	116	102	97	94	95	99	104	106
30.0	104	91	86	83	83	89	93	94
32.5	93	81	75	73	73	78	82	82
35.0	81	70	66	63	64	68	72	72
37.5	70	62	58	56	56	60	63	64
40.0	60	53	50	48	47	51	55	55
42.5	50	44	42	40	40	43	46	47
45.0	41	36	34	32	33	36	39	39
47.5	34	29	27	26	27	29	32	32
50.0	26	22	20	19	20	22	24	24
52.5	19	16	15	14	15	16	17	17
55.0	13	10	10	9	9	10	10	9
57.5	8	6	5	5	5	5	5	4
60.0	4	3	2	2	3	3	3	3
62.5	2	2	2	2	3	2	3	3
65.0	2	2	2	2	2	3	3	3
67.5	1	2	1	1	2	2	2	2
70.0	1	1	1	1	1	1	1	1
72.5	1	1	1	0	1	1	1	1
75.0	0	1	0	0	0	0	0	1
77.5	0	0	0	0	0	0	0	1
80.0	0	0	0	0	0	0	0	0
82.5	0	1	0	0	0	0	0	1
85.0	0	0	0	0	0	0	0	1
87.5	0	0	0	0	0	0	0	1
90.0	0	0	0	0	0	0	0	0



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5-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	5	3
5-	10	9
10-	15	17
15-	20	25
20-	25	29
25-	30	29
30-	35	27
35-	40	24
40-	45	20
45-	50	15
50-	55	11
55-	60	6
60-	65	3
65-	70	1
70-	75	0
75-	80	0
80-	85	0
85-	90	0

10-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	10	12
0-	20	54
0-	30	112
0-	40	163
0-	50	198
0-	60	215
0-	70	219
0-	80	220
0-	90	220



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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC RW	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	112	109	106	104	110	107	104	102	103	101	99	99	97	96	96	94	93	91
2	105	100	95	91	103	98	93	90	95	91	88	91	88	86	89	86	84	82
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74
4	92	83	77	72	90	82	76	71	80	75	70	78	73	69	76	72	69	67
5	86	77	70	64	85	76	69	64	74	68	64	72	67	63	70	66	62	61
6	81	70	63	58	79	70	63	58	68	62	58	67	61	57	65	60	57	55
7	76	65	58	53	75	64	58	53	63	57	53	62	56	52	61	56	52	50
8	72	60	53	49	70	60	53	48	59	53	48	57	52	48	56	51	48	46
9	67	56	49	45	66	56	49	45	55	49	44	54	48	44	53	48	44	42
10	64	52	46	41	63	52	46	41	51	45	41	50	45	41	49	44	41	39

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS TEST SAMPLE.

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HUBBELL
Lighting

Date
3/5/2020

Goniophotometer Calibration

Calibration Lamp: GE 1000W, 120V, T6, CL (FEL)

Lamp Number: ITL78966-1000-66

Calibration Current: 8.300 Amps DC

Total Luminous Flux: 23013.0 Lumens

Calibration Date: 08/20/2019

Test Equipment Used

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>Goniophotometer</i>	ITL/HLI LAB 5 - Test Distance: 56.0'	N/A	N/A
<i>Power Analyzer</i>	Yokogawa / WT 332	C2QA27072V	10/31/2020
<i>Power Source</i>	Voltage-Regulated House Power	N/A	N/A
<i>Thermometer</i>	National Instruments / USB-TC01	1912722	10/31/2020

3-Meter-Sphere Calibration

Calibration Lamp: EIKO 28V75W/E10

Lamp Number: SCL-1400-K136

Calibration Current: 2.679 Amps

Total Luminous Flux: 1429 Lumens

Test Equipment Used - Color & SPD; THD & Power Factor

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>3-Meter Sphere</i>	Labsphere / LMS-3M	N/A	Calibration Checked Daily
<i>Thermometer</i>	National Instruments / USB TC01	1912751	10/31/2020
<i>Power Analyzer</i>	Yokogawa / WT332	C2QA27075V	10/31/2020
<i>Power Supply</i>	Chroma / 61602	616020002113	N/A
<i>Aux Lamp Supply</i>	GW Instek / PSU 150-10	GER221028	N/A
<i>Cal Lamp Supply</i>	Labsphere / LPS-150-0268	1218148505	N/A
<i>Spectrometer</i>	Labsphere / CDS 1100	0624117792	N/A

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