

Project Number
19.01876



HUBBELL
Lighting

Date
10/25/2019

Photometric Test Report

Lab 1
Sphere

Test Sample Description

Catalog Number: P730011-030-30
Description: 2FT WRAP w/ MARKOLON COVESTRO Refractor

Photometry

Test Methods: IES LM-41-14 IES
LM-79-08 §10
Preburn Time: 0:05
Time To Stabilize: 1:26
Total Operating Time: 1:48

Input Voltage (Volts): 120.0
Input Current (Amps): 0.165
Input Wattage (Watts): 19.4
Ambient Temp (°C): 25.9
PF @ 120V: 0.979
THD @ 120V (%): 15.820

Sphere

Test Methods: IES LM-16-93
IES LM-79-08 §12.1
Preburn Time: 1:00
Time To Stabilize: 0:58
Total Operating Time: 2:24

Input Voltage (Volts): 120.0
Input Current (Amps): 0.165
Input Wattage (Watts): 19.4
Ambient Temp (°C): 24



Hubbell Lighting, Inc.

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

Checked (sphere): M.ELLMANN
Checked (photometry): D.ROBBINS
Approved: N. DeVOL



* This customer-provided information was not verified by the laboratory and could affect the validity of the test results.

Note that the LED manufacturer and part number are unverifiable by the lab.

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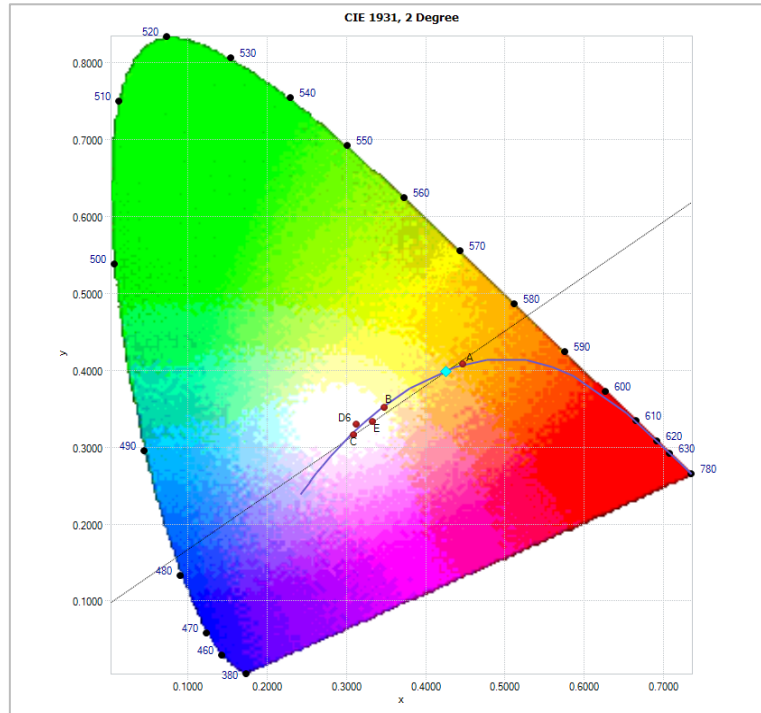
This report shall not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Lamp Cat#: STW9A12D-E2
 Lamp Desc: 42 - Seoul 3000K LEDs

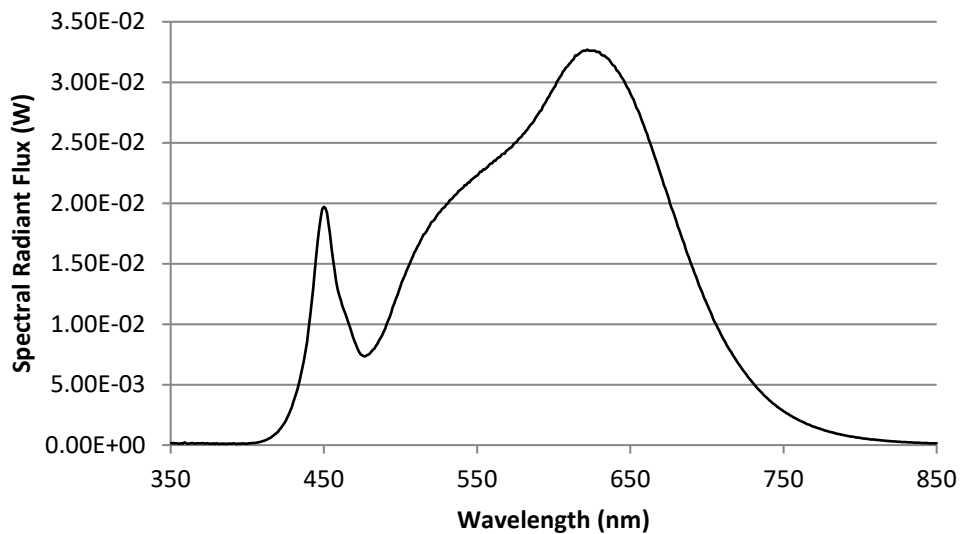
Efficacy: 87.0 LPW S/P Ratio: 1.5 LM/LM

Spectral Results

Name	Value	Unit
Φ	6.00	watts
$\Phi(v)$	1687	lumens
$\Phi(v')$	2494	lm'
Chrom x	0.4256	
Chrom y	0.3988	
Chrom u	0.2455	
Chrom v	0.3451	
Duv	0.0008	
Chrom u'	0.2455	
Chrom v'	0.5176	
CCT	3154	K
Purity	47.5	%
λ (dom)	582.3	nm
FWHM	175.2	nm
λ (peak)	622.6	nm
λ (center)	598.3	nm
λ (centroid)	592.9	nm
SDCM	Cool White	
RA	94	
Corr. Coef.	0.000472844	
Correlation	0.0054	
R1	95.5	
R2	96.1	
R3	95.1	
R4	95.4	
R5	94.7	
R6	94.6	
R7	95.1	
R8	88.8	
R9	72.7	
R10	89.7	
R11	95.6	
R12	81.6	
R13	95.7	
R14	96.5	



Spectral Distribution of Radiant Flux



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LUMINAIRE: 2FT WRAP w/ MARKOLON COVESTRO Refractor

LAMP CAT. NO.: STW9A12D-E2

LAMP: 42- SEOUL 3000K LEDs

MOUNTING: Ceiling

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



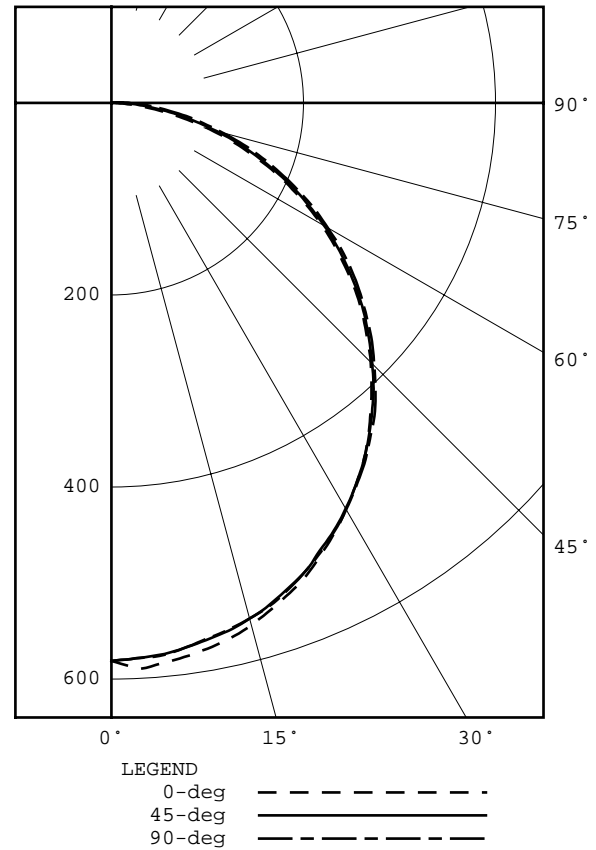
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CANDELA DISTRIBUTION						FLUX
	0.0	22.5	45.0	67.5	90.0	
0	581	581	581	581	581	
5	586	577	577	577	578	55
15	563	555	556	556	556	157
25	518	514	514	515	516	238
35	457	455	457	459	459	286
45	382	382	384	387	387	297
55	297	298	301	304	306	269
65	204	206	209	213	214	207
75	106	108	113	119	120	120
85	20	24	33	41	43	38
90	1	4	10	17	19	
95	0	0	1	4	5	4
105	0	0	0	0	0	0
115	0	0	0	0	0	0
125	0	0	0	0	0	0
135	0	0	0	0	0	0
145	0	0	0	0	0	0
155	0	0	0	0	0	0
165	0	0	0	0	0	0
175	0	0	0	0	0	0
180	0	0	0	0	0	0

ZONAL ZONE	LUMEN LUMENS	SUMMARY	%FIXT
0- 30	450		26.9
0- 40	736		44.1
0- 60	1301		77.9
0- 90	1666		99.8
90-120	4		0.2
90-130	4		0.2
90-150	4		0.2
90-180	4		0.2
0-180	1670		100.0

EFFICACY = 86.1 lm/W
CIE TYPE - DIRECT
PLANE : 0-DEG 90-DEG
SPACING CRITERIA : 1.25 1.25
SHIELDING ANGLES : 90 90





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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 22.750 5.750
HEIGHT OF SIDE : 0.500 0.500

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE AVERAGE AVERAGE
IN DEG 0-DEG 45-DEG 90-DEG
45 6264. 5975. 5966.
55 5949. 5602. 5623.
65 5462. 5029. 5057.
75 4485. 4018. 4148.
85 2173. 2386. 2932.



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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	581	581	581	581	581
5.0	586	577	577	577	578
10.0	577	568	568	568	567
15.0	563	555	556	556	556
20.0	543	538	538	539	539
25.0	518	514	514	515	516
30.0	489	486	488	489	489
35.0	457	455	457	459	459
40.0	420	420	422	424	426
45.0	382	382	384	387	387
50.0	341	342	344	346	347
55.0	297	298	301	304	306
60.0	252	253	256	260	260
65.0	204	206	209	213	214
70.0	154	156	160	166	167
75.0	106	108	113	119	120
80.0	58	62	70	76	79
85.0	20	24	33	41	43
90.0	1	4	10	17	19
95.0	0	0	1	4	5
100.0	0	0	0	0	0
105.0	0	0	0	0	0
110.0	0	0	0	0	0
115.0	0	0	0	0	0
120.0	0	0	0	0	0
125.0	0	0	0	0	0
130.0	0	0	0	0	0
135.0	0	0	0	0	0
140.0	0	0	0	0	0
145.0	0	0	0	0	0
150.0	0	0	0	0	0
155.0	0	0	0	0	0
160.0	0	0	0	0	0
165.0	0	0	0	0	0
170.0	0	0	0	0	0
175.0	0	0	0	0	0
180.0	0	0	0	0	0



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5-DEGREE ZONAL LUMEN SUMMARY		
0- 5		14
5- 10		41
10- 15		67
15- 20		90
20- 25		111
25- 30		127
30- 35		139
35- 40		147
40- 45		149
45- 50		147
50- 55		140
55- 60		129
60- 65		113
65- 70		94
70- 75		72
75- 80		48
80- 85		27
85- 90		11
90- 95		3
95-100		0
100-105		0
105-110		0
110-115		0
115-120		0
120-125		0
125-130		0
130-135		0
135-140		0
140-145		0
145-150		0
150-155		0
155-160		0
160-165		0
165-170		0
170-175		0
175-180		0

10-DEGREE ZONAL LUMEN SUMMARY		
0- 10		55
0- 20		212
0- 30		450
0- 40		736
0- 50		1032
0- 60		1301
0- 70		1508
0- 80		1628
0- 90		1666
0-100		1670
0-110		1670
0-120		1670
0-130		1670
0-140		1670
0-150		1670
0-160		1670
0-170		1670
0-180		1670



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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80				70				50			30			10			0
RW	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	108	104	99	95	106	101	97	94	97	94	91	93	90	88	89	87	85	83
2	98	90	83	77	96	88	82	76	85	79	75	81	77	73	78	74	71	69
3	90	79	71	64	87	77	70	63	74	68	62	72	66	61	69	64	60	58
4	82	70	61	54	80	69	60	54	66	59	53	64	57	52	61	56	52	49
5	75	62	53	47	73	61	53	46	59	52	46	57	50	45	55	49	45	43
6	70	56	47	41	68	55	47	40	53	46	40	52	45	40	50	44	39	37
7	65	51	42	36	63	50	42	36	48	41	35	47	40	35	46	40	35	33
8	60	46	38	32	58	46	38	32	44	37	32	43	36	31	42	36	31	29
9	56	43	34	29	55	42	34	29	41	34	28	40	33	28	39	33	28	26
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	26	24

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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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: 10/07/2019

Test Equipment Used

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>Goniophotometer</i>	ITL/HLI LAB 1 - Test Distance: 31.74'	N/A	N/A
<i>Power Analyzer</i>	Yokogawa / WT 332	C2QA27071V	10/31/2020
<i>Power Source</i>	Voltage-Regulated House Power	N/A	N/A
<i>Thermometer</i>	National Instruments / USB-TC01	176F4E3	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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