

Project Number
19.01877



HUBBELL
Lighting

Date
10/28/2019

Photometric Test Report

Lab 1
Sphere

Test Sample Description

Catalog Number: P730012-030-30
Description: 4FT WRAP w/ MARKOLON COVESTRO Refractor

Photometry

Test Methods: IES LM-41-14 IES
LM-79-08 §10
Preburn Time: 0:10
Time To Stabilize: 1:05
Total Operating Time: 2:46

Input Voltage (Volts): 120.0
Input Current (Amps): 0.288
Input Wattage (Watts): 34.2
Ambient Temp (°C): 25.7
PF @ 120V: 0.997
THD @ 120V (%): 7.000

Sphere

Test Methods: IES LM-16-93
IES LM-79-08 §12.1
Preburn Time: 0:10
Time To Stabilize: 1:28
Total Operating Time: 2:03

Input Voltage (Volts): 120.1
Input Current (Amps): 0.285
Input Wattage (Watts): 34.1
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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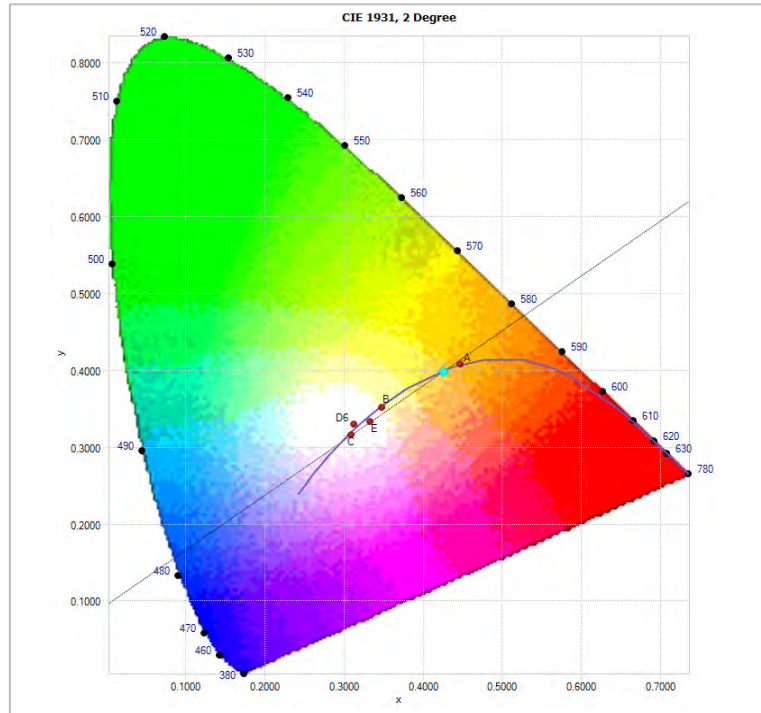


Lamp Cat#: STW9A12D-E2
 Lamp Desc: 98 - Seoul 3000K LEDs

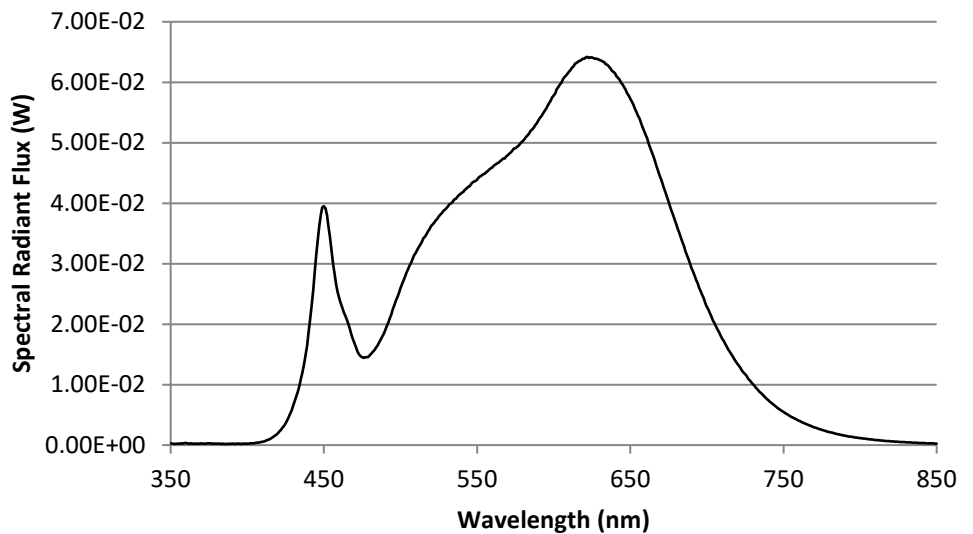
Efficacy: 97.2 LPW S/P Ratio: 1.5 LM/LM

Spectral Results

Name	Value	Unit
Φ	11.78	watts
Φ(v)	3315	lumens
Φ(v')	4910	lm'
Chrom x	0.4254	
Chrom y	0.399	
Chrom u	0.2453	
Chrom v	0.3451	
Duv	0.0006	
Chrom u'	0.2453	
Chrom v'	0.5177	
CCT	3161	K
Purity	47.4	%
λ (dom)	582.3	nm
FWHM	175.5	nm
λ (peak)	622.3	nm
λ (center)	598.3	nm
λ (centroid)	593.0	nm
SDCM	Cool White	
RA	94	
Corr. Coef.	0.000346098	
Correlation	0.0054	
R1	95.6	
R2	96.1	
R3	95.0	
R4	95.5	
R5	94.8	
R6	94.6	
R7	95.3	
R8	89.1	
R9	73.3	
R10	89.6	
R11	95.7	
R12	81.1	
R13	95.7	
R14	96.4	



Spectral Distribution of Radiant Flux



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LUMINAIRE: 4FT WRAP w/ MARKOLON COVESTRO Refractor

LAMP CAT. NO.: STW9A12D-E2

LAMP: 98- SEOUL 3000K LEDs

MOUNTING: Ceiling

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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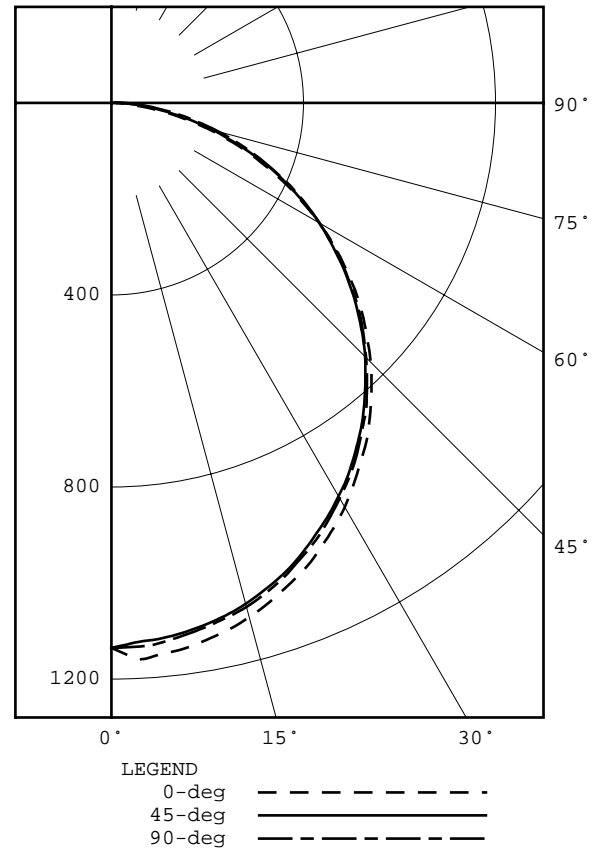
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CANDELA DISTRIBUTION						FLUX
	0.0	22.5	45.0	67.5	90.0	
0	1135	1135	1135	1135	1135	
5	1153	1126	1121	1130	1130	107
15	1109	1083	1080	1089	1087	307
25	1026	1003	998	1007	1006	464
35	907	888	886	892	892	558
45	764	747	747	750	750	579
55	593	583	585	588	588	524
65	402	402	407	410	413	402
75	207	211	220	227	231	231
85	38	44	59	70	75	69
90	1	5	16	25	29	
95	0	0	2	6	7	5
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	878		27.0
0- 40	1435		44.2
0- 60	2538		78.2
0- 90	3240		99.8
90-120	5		0.2
90-130	5		0.2
90-150	5		0.2
90-180	5		0.2
0-180	3245		100.0

EFFICACY = 94.9 lm/W
CIE TYPE - DIRECT
PLANE : 0-DEG 90-DEG
SPACING CRITERIA : 1.27 1.25
SHIELDING ANGLES : 90 90





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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 46.750 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	6164.	5698.	5627.
55	5872.	5353.	5258.
65	5362.	4837.	4749.
75	4435.	3897.	3885.
85	2240.	2182.	2489.



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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	1135	1135	1135	1135	1135
5.0	1153	1126	1121	1130	1130
10.0	1136	1110	1105	1113	1110
15.0	1109	1083	1080	1089	1087
20.0	1071	1047	1045	1053	1051
25.0	1026	1003	998	1007	1006
30.0	972	949	946	953	951
35.0	907	888	886	892	892
40.0	839	821	819	825	826
45.0	764	747	747	750	750
50.0	682	668	668	672	673
55.0	593	583	585	588	588
60.0	499	494	500	500	501
65.0	402	402	407	410	413
70.0	304	306	313	317	320
75.0	207	211	220	227	231
80.0	116	120	130	141	146
85.0	38	44	59	70	75
90.0	1	5	16	25	29
95.0	0	0	2	6	7
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		27
5- 10		80
10- 15		131
15- 20		176
20- 25		216
25- 30		248
30- 35		272
35- 40		286
40- 45		291
45- 50		287
50- 55		273
55- 60		251
60- 65		220
65- 70		182
70- 75		139
75- 80		93
80- 85		50
85- 90		19
90- 95		4
95-100		1
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		107
0- 20		414
0- 30		878
0- 40		1435
0- 50		2014
0- 60		2538
0- 70		2940
0- 80		3172
0- 90		3240
0-100		3245
0-110		3245
0-120		3245
0-130		3245
0-140		3245
0-150		3245
0-160		3245
0-170		3245
0-180		3245



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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	109	104	99	95	106	101	97	94	97	94	91	93	90	88	89	87	85	83
2	99	90	83	77	96	88	82	77	85	79	75	81	77	73	78	75	71	69
3	90	79	71	64	87	78	70	64	74	68	63	72	66	61	69	64	60	58
4	82	70	61	54	80	69	60	54	66	59	53	64	58	52	62	56	52	49
5	76	63	53	47	73	61	53	46	59	52	46	57	51	45	55	50	45	43
6	70	56	47	41	68	55	47	41	53	46	40	52	45	40	50	44	39	37
7	65	51	42	36	63	50	42	36	49	41	36	47	40	35	46	40	35	33
8	60	47	38	32	59	46	38	32	44	37	32	43	36	32	42	36	31	29
9	56	43	34	29	55	42	34	29	41	34	29	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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