

LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: FAIL-SAFE

Report Number: P517455

Luminaire Tested: HVL12-4-LD4-1LO-35-UNV-C-EDD-90

Issue Date: 4/27/2021

Tested By:

Approved By:



NVLAP Lab Code: 200050-0

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Test Information

Test Method: LM-79-2019
Report Number: P517455
Test Lab: INNOVATION CENTER
Issue Date: 4/27/2021
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: FAIL-SAFE
Catalog Number: HVL12-4-LD4-1LO-35-UNV-C-EDD-90
Description: 4 FOOT, 12 INCH WIDE, HVL LED LUMINAIRE, WITH 3500K, 90 CRI LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2978.9 lumens
Efficiency: N/A
Efficacy: 126.2 lumens/watt
Spacing Criteria (0/90/45): 1.18 / 1.32 / 1.37
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 4' x H: 0.17')
CIE Type: Direct

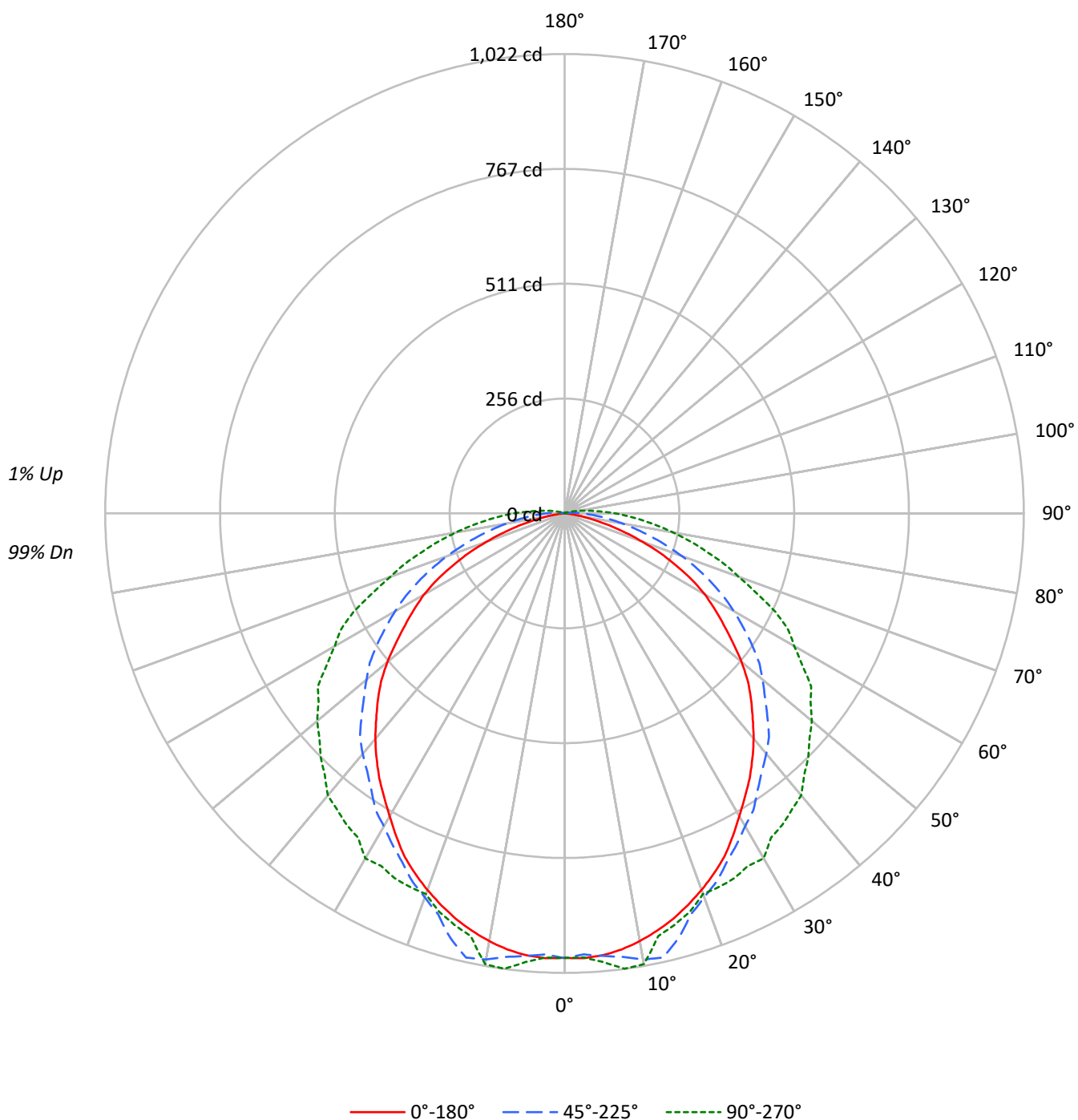
Input Watts (W): 23.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	P3	10/30/2015	4/30/2016
Power Meter	IN0214	1/12/2016	1/12/2017
AC Power Source	IN0062	1/12/2016	1/12/2017
DC Power Supply	--	--	--
Room Thermometer	IN0145	1/13/2016	1/13/2017

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Luminous Intensity Polar Plot



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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20					20					20					20
RC	80				70					50					30					10
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	119	119	119	119	116	116	116	116	110	110	110	105	105	105	101	101	101			99
1	108	103	98	94	105	100	96	92	96	92	89	91	89	86	87	85	83			81
2	98	89	82	76	95	87	80	75	83	78	73	80	75	71	76	72	69			67
3	89	78	69	63	86	76	68	62	73	66	61	70	64	59	67	62	58			56
4	81	69	60	53	79	67	59	52	65	57	51	62	56	51	60	54	50			47
5	75	61	52	45	72	60	51	45	58	50	44	56	49	44	54	48	43			41
6	69	55	46	39	67	54	46	39	52	45	39	50	44	38	49	43	38			36
7	64	50	41	35	62	49	41	35	47	40	34	46	39	34	44	38	34			32
8	59	46	37	31	58	45	37	31	43	36	31	42	35	30	41	35	30			28
9	55	42	34	28	54	41	33	28	40	33	28	39	32	27	38	32	27			25
10	52	39	31	25	51	38	30	25	37	30	25	36	29	25	35	29	25			23

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2661	2661	2661
5°	2655	2635	2667
10°	2620	2684	2703
15°	2572	2624	2526
20°	2515	2470	2433
25°	2453	2376	2466
30°	2360	2302	2512
35°	2293	2232	2487
40°	2222	2183	2524
45°	2145	2118	2502
50°	2052	2048	2509
55°	1915	1974	2539
60°	1810	1866	2466
65°	1600	1736	2429
70°	1305	1560	2227
75°	931	1342	2094
80°	523	1122	1961
85°	194	897	1845

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 55°

Luminance: 2539 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	95.0	3.2
10°-20°	270.7	9.1
20°-30°	402.7	13.5
30°-40°	484.0	16.2
40°-50°	509.5	17.1
50°-60°	472.7	15.9
60°-70°	373.8	12.5
70°-80°	228.3	7.7
80°-90°	99.5	3.3
90°-100°	31.0	1.0
100°-110°	7.0	0.2
110°-120°	2.8	0.1
120°-130°	1.6	0.1
130°-140°	0.4	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	768.4	25.8
0°-40°	1252.4	42.0
0°-60°	2234.7	75.0
0°-90°	2936.3	98.6
90°-120°	40.7	1.4
90°-150°	42.7	1.4
90°-180°	43.0	1.4
0°-180°	2978.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	989	989	989	989	989	
5°	986	984	988	999	1002	93
15°	934	970	979	947	947	263
25°	842	896	855	881	895	387
35°	718	738	750	818	845	449
45°	587	590	638	740	767	453
55°	432	440	509	621	670	389
65°	274	282	359	475	518	271
75°	104	137	200	307	327	113
85°	9	32	78	151	174	14
90°	0	10	41	96	113	0
95°	0	2	18	53	64	0
105°	0	1	4	10	14	0
115°	0	1	3	5	5	0
125°	0	0	1	3	4	0
135°	0	0	0	1	1	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

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	988.9	988.9	988.9	988.9	988.9
2.5°	990.1	987.5	982.0	987.3	988.7
5°	986.4	984.4	987.9	998.9	1001.8
7.5°	978.2	985.8	994.9	1015.1	1021.5
10°	965.9	980.4	1007.6	1024.7	1018.1
12.5°	951.0	975.6	1012.0	978.6	963.1
15°	933.7	969.5	979.0	946.6	947.2
17.5°	913.3	964.5	935.3	934.5	928.6
20°	891.4	947.6	908.9	907.3	901.0
22.5°	867.8	925.2	885.5	882.3	899.2
25°	842.2	896.0	855.1	880.7	895.0
27.5°	810.2	857.7	829.7	866.0	883.9
30°	777.8	818.2	803.7	854.3	886.1
32.5°	747.3	777.0	782.4	849.9	855.1
35°	718.5	738.5	749.6	817.6	845.4
37.5°	686.9	692.3	721.8	804.1	830.9
40°	654.7	651.3	698.4	782.0	819.1
42.5°	620.0	618.8	673.6	770.9	789.4
45°	587.2	589.8	638.4	739.5	767.1
47.5°	553.6	557.0	604.9	705.0	739.3
50°	514.5	518.9	575.1	674.4	718.5
52.5°	472.2	480.6	546.1	645.4	689.9
55°	432.5	439.5	509.2	620.6	670.0
57.5°	396.2	400.5	471.2	589.4	626.7
60°	360.6	361.6	435.3	554.8	590.4
62.5°	319.7	321.5	398.4	513.9	561.6
65°	273.8	282.4	358.8	474.8	517.9
67.5°	230.8	246.0	318.3	438.9	461.5
70°	184.9	210.5	278.6	396.8	412.7
72.5°	142.8	172.8	237.9	349.7	372.1
75°	103.5	137.2	200.0	307.4	326.7
77.5°	69.7	103.9	164.6	260.7	286.2
80°	41.7	75.9	132.9	217.4	246.2
82.5°	21.4	51.0	103.1	182.3	208.1
85°	9.3	32.2	78.0	151.3	173.6
87.5°	2.6	18.3	57.4	122.3	141.2
90°	0.2	9.7	40.9	95.9	113.0
92.5°	0.2	4.6	28.8	72.5	85.6
95°	0.2	2.4	17.9	52.6	64.3
97.5°	0.2	1.4	10.9	37.3	47.1
100°	0.2	1.2	6.4	24.8	33.6
102.5°	0.2	1.4	4.4	15.7	22.0
105°	0.2	1.4	3.6	10.3	14.5
107.5°	0.4	1.4	3.2	7.7	10.1
110°	0.2	1.2	3.4	5.8	7.9

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	0.4	1.0	3.2	4.8	5.8
115°	0.2	0.8	2.8	4.6	4.8
117.5°	0.4	0.6	2.2	4.6	4.8
120°	0.4	0.4	1.8	4.4	5.0
122.5°	0.4	0.4	1.4	4.0	4.8
125°	0.2	0.4	1.2	3.0	4.2
127.5°	0.4	0.4	1.0	2.4	3.2
130°	0.4	0.4	0.8	1.8	2.4
132.5°	0.4	0.4	0.6	1.4	1.8
135°	0.4	0.4	0.4	1.0	1.4
137.5°	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)