

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: P517571

Luminaire Tested: HVL12-4-LD4-3STD-40-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: P517571
Test Lab: INNOVATION CENTER
Issue Date: 4/27/2021
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: FAIL-SAFE
Catalog Number: HVL12-4-LD4-3STD-40-UNV-C-EDD-90
Description: 4 FOOT, 12 INCH WIDE, HVL LED LUMINAIRE, WITH 4000K, 90 CRI LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 11607.0 lumens
Efficiency: N/A
Efficacy: 118.3 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

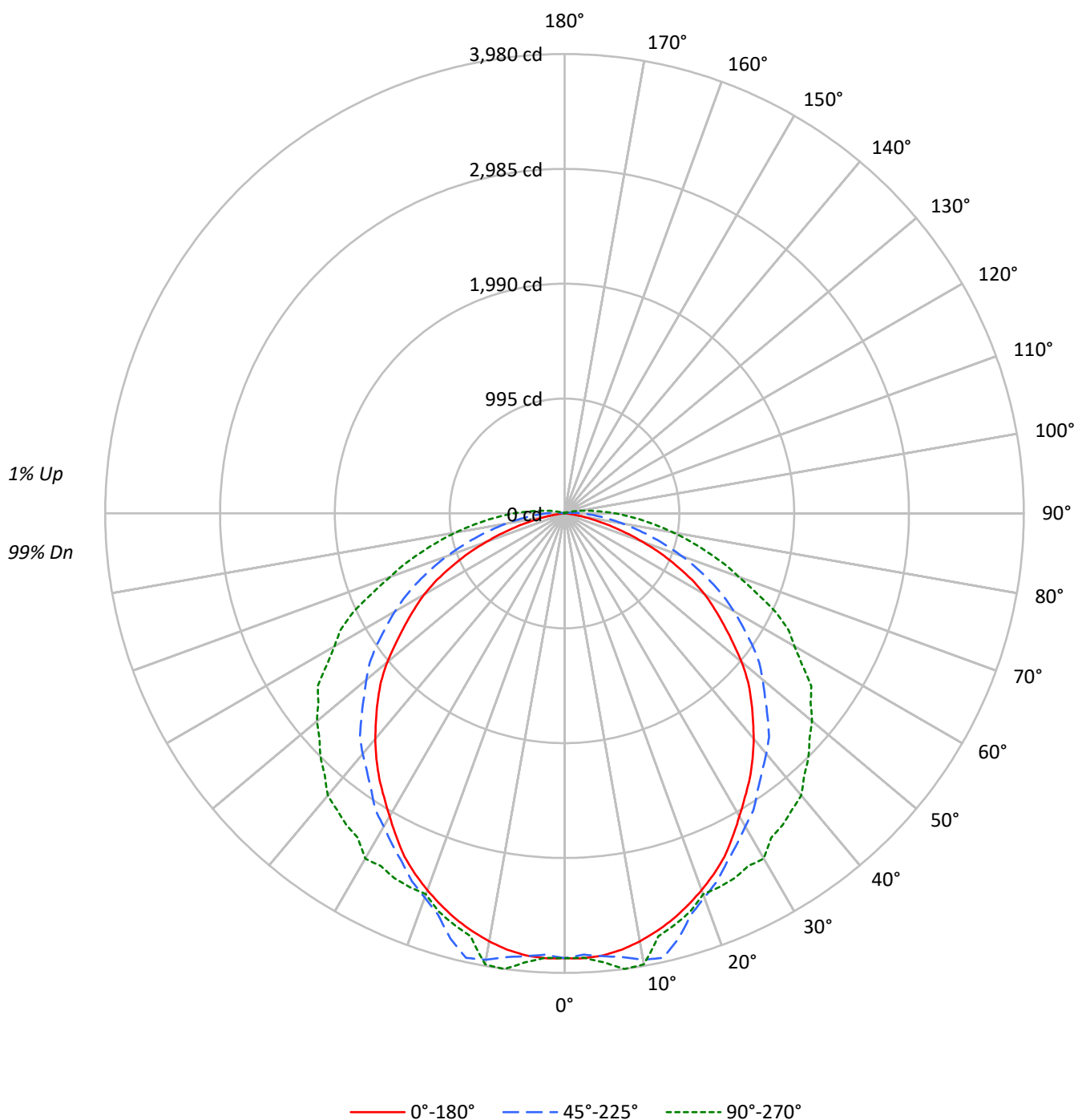
Input Watts (W): 98.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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°	10368	10368	10368
5°	10345	10265	10392
10°	10208	10456	10529
15°	10023	10223	9842
20°	9797	9625	9478
25°	9558	9256	9607
30°	9195	8968	9786
35°	8936	8697	9690
40°	8658	8507	9835
45°	8359	8250	9749
50°	7995	7980	9778
55°	7462	7690	9892
60°	7052	7272	9607
65°	6234	6763	9465
70°	5086	6079	8678
75°	3630	5228	8159
80°	2037	4373	7640
85°	755	3493	7190

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 55°

Luminance: 9892 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	370.3	3.2
10°-20°	1054.5	9.1
20°-30°	1569.0	13.5
30°-40°	1886.0	16.2
40°-50°	1985.1	17.1
50°-60°	1842.0	15.9
60°-70°	1456.4	12.5
70°-80°	889.6	7.7
80°-90°	387.6	3.3
90°-100°	120.7	1.0
100°-110°	27.1	0.2
110°-120°	10.9	0.1
120°-130°	6.1	0.1
130°-140°	1.7	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°	2993.9	25.8
0°-40°	4879.9	42.0
0°-60°	8706.9	75.0
0°-90°	11440.5	98.6
90°-120°	158.7	1.4
90°-150°	166.5	1.4
90°-180°	166.0	1.4
0°-180°	11607.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3853	3853	3853	3853	3853	
5°	3844	3836	3849	3892	3903	364
15°	3638	3778	3814	3688	3690	1025
25°	3282	3491	3332	3431	3487	1507
35°	2800	2877	2920	3186	3294	1750
45°	2288	2298	2487	2881	2989	1764
55°	1685	1713	1984	2418	2610	1514
65°	1067	1100	1398	1850	2018	1056
75°	403	534	779	1198	1273	440
85°	36	126	304	589	677	56
90°	1	38	159	374	440	2
95°	1	9	70	205	250	1
105°	1	6	14	40	56	1
115°	1	3	11	18	19	1
125°	1	2	5	12	16	1
135°	2	2	2	4	6	1
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°	3852.9	3852.9	3852.9	3852.9	3852.9
2.5°	3857.6	3847.4	3826.2	3846.6	3852.1
5°	3843.5	3835.6	3849.0	3892.1	3903.1
7.5°	3811.3	3841.1	3876.4	3954.9	3980.0
10°	3763.4	3819.9	3925.9	3992.6	3966.7
12.5°	3705.3	3801.1	3943.2	3812.9	3752.4
15°	3637.8	3777.5	3814.4	3688.1	3690.4
17.5°	3558.6	3757.9	3644.1	3641.0	3618.2
20°	3473.0	3692.0	3541.3	3535.0	3510.7
22.5°	3381.2	3604.9	3450.3	3437.7	3503.6
25°	3281.5	3491.1	3331.7	3431.4	3487.1
27.5°	3156.7	3341.9	3232.9	3374.1	3444.0
30°	3030.4	3188.1	3131.6	3328.6	3452.6
32.5°	2911.8	3027.2	3048.4	3311.3	3331.7
35°	2799.6	2877.3	2920.5	3185.8	3294.1
37.5°	2676.4	2697.6	2812.2	3133.2	3237.6
40°	2550.8	2537.5	2721.1	3046.8	3191.3
42.5°	2415.8	2411.1	2624.6	3003.7	3075.9
45°	2287.9	2298.1	2487.2	2881.2	2988.8
47.5°	2156.8	2170.1	2356.9	2747.0	2880.4
50°	2004.5	2021.8	2240.8	2627.7	2799.6
52.5°	1839.7	1872.7	2127.8	2514.7	2688.2
55°	1685.1	1712.6	1984.1	2418.2	2610.5
57.5°	1543.8	1560.3	1835.8	2296.5	2441.7
60°	1404.9	1408.8	1696.1	2161.5	2300.4
62.5°	1245.6	1252.6	1552.5	2002.2	2188.2
65°	1066.6	1100.4	1397.8	1849.9	2017.9
67.5°	899.5	958.3	1240.1	1710.2	1798.1
70°	720.5	820.2	1085.5	1546.2	1608.2
72.5°	556.5	673.4	926.9	1362.5	1449.6
75°	403.4	534.5	779.4	1197.7	1273.0
77.5°	271.6	405.0	641.2	1015.6	1115.3
80°	162.5	295.9	518.0	846.9	959.1
82.5°	83.2	198.6	401.8	710.3	810.8
85°	36.1	125.6	303.7	589.4	676.6
87.5°	10.2	71.4	223.7	476.4	550.2
90°	0.8	37.7	159.3	373.6	440.3
92.5°	0.8	18.1	112.2	282.6	333.6
95°	0.8	9.4	69.9	204.8	250.4
97.5°	0.8	5.5	42.4	145.2	183.7
100°	0.8	4.7	25.1	96.5	131.1
102.5°	0.8	5.5	17.3	61.2	85.6
105°	0.8	5.5	14.1	40.0	56.5
107.5°	1.6	5.5	12.6	29.8	39.2
110°	0.8	4.7	13.3	22.8	30.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1.6	3.9	12.6	18.8	22.8
115°	0.8	3.1	11.0	18.1	18.8
117.5°	1.6	2.4	8.6	18.1	18.8
120°	1.6	1.6	7.1	17.3	19.6
122.5°	1.6	1.6	5.5	15.7	18.8
125°	0.8	1.6	4.7	11.8	16.5
127.5°	1.6	1.6	3.9	9.4	12.6
130°	1.6	1.6	3.1	7.1	9.4
132.5°	1.6	1.6	2.4	5.5	7.1
135°	1.6	1.6	1.6	3.9	5.5
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)