

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: P517487

Luminaire Tested: HVL12-4-LD4-2HI-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: P517487
Test Lab: INNOVATION CENTER
Issue Date: 4/27/2021
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: FAIL-SAFE
Catalog Number: HVL12-4-LD4-2HI-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: 9378.0 lumens
Efficiency: N/A
Efficacy: 106.0 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

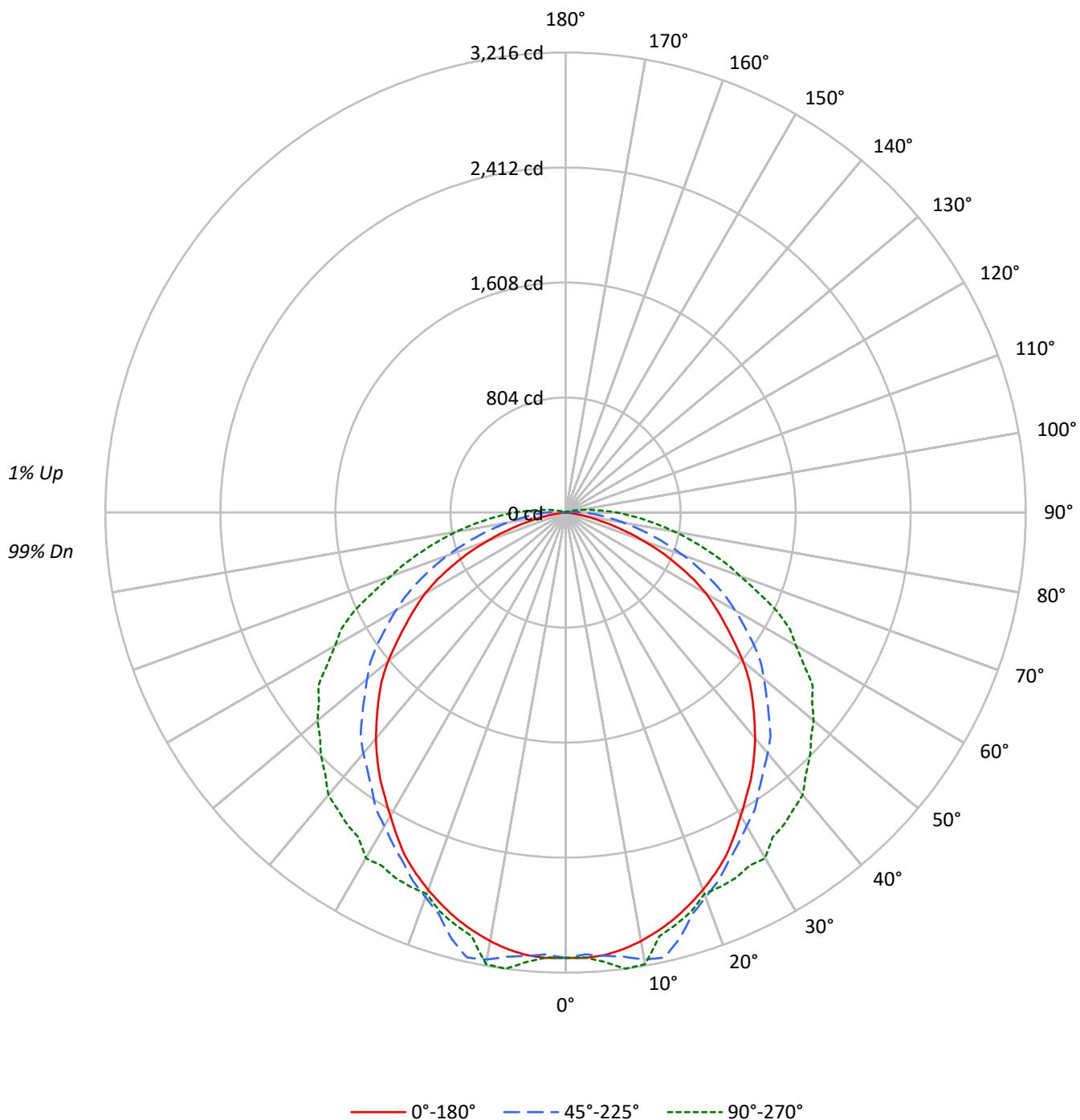
Input Watts (W): 88.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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°	8377	8377	8377
5°	8358	8293	8396
10°	8248	8448	8507
15°	8098	8260	7952
20°	7916	7777	7658
25°	7722	7479	7762
30°	7429	7246	7907
35°	7220	7027	7829
40°	6995	6873	7946
45°	6753	6666	7877
50°	6460	6447	7900
55°	6029	6214	7992
60°	5698	5876	7762
65°	5037	5465	7648
70°	4109	4912	7011
75°	2932	4224	6593
80°	1646	3533	6173
85°	611	2823	5809

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 55°

Luminance: 7992 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	299.2	3.2
10°-20°	852.0	9.1
20°-30°	1267.7	13.5
30°-40°	1523.8	16.2
40°-50°	1603.9	17.1
50°-60°	1488.2	15.9
60°-70°	1176.7	12.5
70°-80°	718.8	7.7
80°-90°	313.1	3.3
90°-100°	97.5	1.0
100°-110°	21.9	0.2
110°-120°	8.8	0.1
120°-130°	5.0	0.1
130°-140°	1.3	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°	2418.9	25.8
0°-40°	3942.8	42.0
0°-60°	7034.9	75.0
0°-90°	9243.5	98.6
90°-120°	128.2	1.4
90°-150°	134.5	1.4
90°-180°	134.0	1.4
0°-180°	9378.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3113	3113	3113	3113	3113	
5°	3105	3099	3110	3145	3154	294
15°	2939	3052	3082	2980	2982	828
25°	2651	2821	2692	2772	2818	1217
35°	2262	2325	2360	2574	2662	1414
45°	1848	1857	2010	2328	2415	1425
55°	1362	1384	1603	1954	2109	1223
65°	862	889	1129	1495	1630	853
75°	326	432	630	968	1029	356
85°	29	102	245	476	547	45
90°	1	30	129	302	356	1
95°	1	8	56	166	202	0
105°	1	4	11	32	46	1
115°	1	2	9	15	15	1
125°	1	1	4	10	13	1
135°	1	1	1	3	4	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°	3113.0	3113.0	3113.0	3113.0	3113.0
2.5°	3116.8	3108.5	3091.4	3107.9	3112.4
5°	3105.4	3099.0	3109.8	3144.7	3153.6
7.5°	3079.4	3103.5	3132.0	3195.4	3215.7
10°	3040.7	3086.4	3172.0	3225.9	3204.9
12.5°	2993.8	3071.1	3185.9	3080.6	3031.8
15°	2939.2	3052.1	3081.9	2979.8	2981.7
17.5°	2875.2	3036.3	2944.3	2941.8	2923.4
20°	2806.1	2983.0	2861.2	2856.2	2836.5
22.5°	2731.9	2912.6	2787.7	2777.5	2830.8
25°	2651.3	2820.6	2691.9	2772.5	2817.5
27.5°	2550.5	2700.2	2612.0	2726.2	2782.6
30°	2448.4	2575.9	2530.2	2689.4	2789.6
32.5°	2352.7	2445.9	2463.0	2675.4	2691.9
35°	2262.0	2324.8	2359.6	2574.0	2661.5
37.5°	2162.4	2179.5	2272.1	2531.5	2615.8
40°	2061.0	2050.2	2198.6	2461.7	2578.4
42.5°	1951.9	1948.1	2120.6	2426.8	2485.2
45°	1848.5	1856.8	2009.6	2327.9	2414.8
47.5°	1742.6	1753.4	1904.3	2219.5	2327.3
50°	1619.6	1633.5	1810.5	2123.1	2262.0
52.5°	1486.4	1513.1	1719.1	2031.8	2171.9
55°	1361.5	1383.7	1603.1	1953.8	2109.1
57.5°	1247.4	1260.7	1483.2	1855.5	1972.8
60°	1135.1	1138.3	1370.4	1746.4	1858.7
62.5°	1006.4	1012.1	1254.3	1617.7	1768.0
65°	861.8	889.1	1129.4	1494.7	1630.4
67.5°	726.7	774.3	1001.9	1381.8	1452.8
70°	582.1	662.7	877.0	1249.3	1299.3
72.5°	449.6	544.1	748.9	1100.9	1171.3
75°	325.9	431.8	629.7	967.7	1028.6
77.5°	219.4	327.2	518.1	820.6	901.1
80°	131.3	239.1	418.5	684.2	774.9
82.5°	67.2	160.4	324.7	573.9	655.1
85°	29.2	101.5	245.4	476.2	546.6
87.5°	8.2	57.7	180.7	384.9	444.5
90°	0.6	30.4	128.7	301.8	355.8
92.5°	0.6	14.6	90.7	228.3	269.5
95°	0.6	7.6	56.4	165.5	202.3
97.5°	0.6	4.4	34.2	117.3	148.4
100°	0.6	3.8	20.3	78.0	105.9
102.5°	0.6	4.4	14.0	49.5	69.1
105°	0.6	4.4	11.4	32.3	45.7
107.5°	1.3	4.4	10.1	24.1	31.7
110°	0.6	3.8	10.8	18.4	24.7

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1.3	3.2	10.1	15.2	18.4
115°	0.6	2.5	8.9	14.6	15.2
117.5°	1.3	1.9	7.0	14.6	15.2
120°	1.3	1.3	5.7	14.0	15.9
122.5°	1.3	1.3	4.4	12.7	15.2
125°	0.6	1.3	3.8	9.5	13.3
127.5°	1.3	1.3	3.2	7.6	10.1
130°	1.3	1.3	2.5	5.7	7.6
132.5°	1.3	1.3	1.9	4.4	5.7
135°	1.3	1.3	1.3	3.2	4.4
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)