

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: P517471

Luminaire Tested: HVL12-4-LD4-1STD-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: P517471
Test Lab: INNOVATION CENTER
Issue Date: 4/27/2021
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: FAIL-SAFE
Catalog Number: HVL12-4-LD4-1STD-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: 3837.0 lumens
Efficiency: N/A
Efficacy: 114.5 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

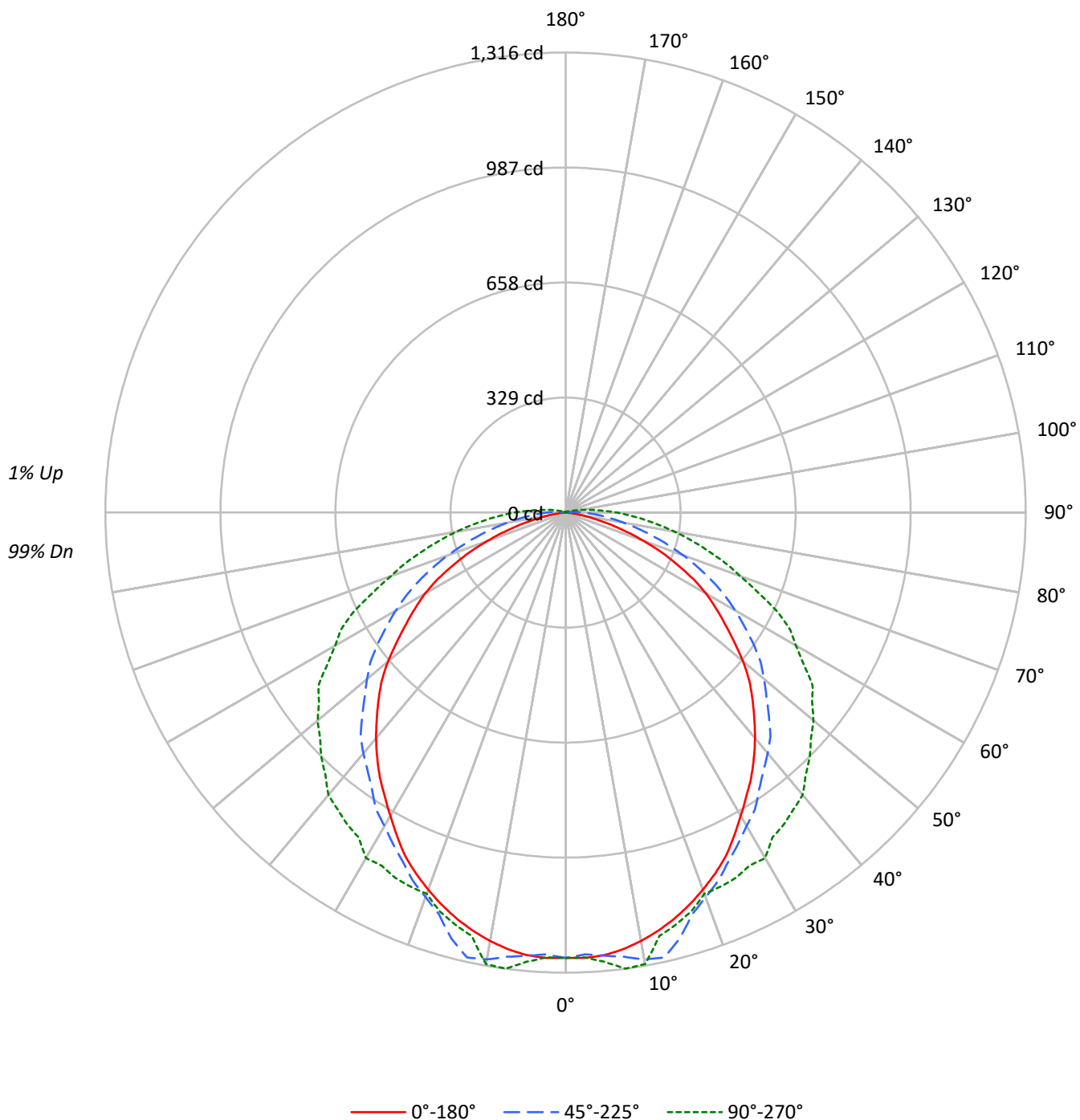
Input Watts (W): 33.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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°	3427	3427	3427
5°	3420	3393	3435
10°	3375	3456	3481
15°	3313	3380	3253
20°	3239	3182	3133
25°	3160	3060	3176
30°	3040	2964	3235
35°	2954	2875	3203
40°	2862	2812	3251
45°	2763	2727	3223
50°	2643	2638	3232
55°	2467	2542	3270
60°	2331	2404	3176
65°	2061	2236	3129
70°	1682	2010	2869
75°	1200	1728	2697
80°	673	1445	2526
85°	249	1155	2377

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 55°

Luminance: 3270 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	122.4	3.2
10°-20°	348.6	9.1
20°-30°	518.7	13.5
30°-40°	623.5	16.2
40°-50°	656.2	17.1
50°-60°	608.9	15.9
60°-70°	481.4	12.5
70°-80°	294.1	7.7
80°-90°	128.1	3.3
90°-100°	39.9	1.0
100°-110°	9.0	0.2
110°-120°	3.6	0.1
120°-130°	2.0	0.1
130°-140°	0.5	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°	989.7	25.8
0°-40°	1613.2	42.0
0°-60°	2878.3	75.0
0°-90°	3782.0	98.6
90°-120°	52.5	1.4
90°-150°	55.0	1.4
90°-180°	55.0	1.4
0°-180°	3837.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1274	1274	1274	1274	1274	
5°	1271	1268	1272	1287	1290	120
15°	1203	1249	1261	1219	1220	339
25°	1085	1154	1101	1134	1153	498
35°	926	951	965	1053	1089	578
45°	756	760	822	952	988	583
55°	557	566	656	799	863	501
65°	353	364	462	612	667	349
75°	133	177	258	396	421	146
85°	12	42	100	195	224	18
90°	0	12	53	124	146	1
95°	0	3	23	68	83	0
105°	0	2	5	13	19	0
115°	0	1	4	6	6	0
125°	0	0	2	4	5	0
135°	0	0	0	1	2	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°	1273.7	1273.7	1273.7	1273.7	1273.7
2.5°	1275.2	1271.9	1264.9	1271.6	1273.4
5°	1270.6	1268.0	1272.4	1286.6	1290.3
7.5°	1259.9	1269.8	1281.5	1307.4	1315.7
10°	1244.1	1262.8	1297.8	1319.9	1311.3
12.5°	1224.9	1256.6	1303.5	1260.4	1240.5
15°	1202.6	1248.8	1261.0	1219.2	1220.0
17.5°	1176.4	1242.3	1204.7	1203.6	1196.1
20°	1148.1	1220.5	1170.7	1168.6	1160.6
22.5°	1117.7	1191.7	1140.6	1136.4	1158.2
25°	1084.8	1154.1	1101.4	1134.3	1152.8
27.5°	1043.5	1104.8	1068.7	1115.4	1138.5
30°	1001.8	1053.9	1035.2	1100.4	1141.4
32.5°	962.6	1000.7	1007.7	1094.6	1101.4
35°	925.5	951.2	965.4	1053.1	1088.9
37.5°	884.7	891.8	929.6	1035.8	1070.3
40°	843.2	838.8	899.5	1007.2	1055.0
42.5°	798.6	797.1	867.6	992.9	1016.8
45°	756.3	759.7	822.2	952.5	988.0
47.5°	713.0	717.4	779.1	908.1	952.2
50°	662.7	668.4	740.8	868.7	925.5
52.5°	608.2	619.1	703.4	831.3	888.6
55°	557.1	566.1	655.9	799.4	863.0
57.5°	510.4	515.8	606.9	759.2	807.2
60°	464.4	465.7	560.7	714.5	760.5
62.5°	411.8	414.1	513.2	661.9	723.4
65°	352.6	363.8	462.1	611.5	667.1
67.5°	297.3	316.8	409.9	565.4	594.4
70°	238.2	271.1	358.8	511.1	531.6
72.5°	184.0	222.6	306.4	450.4	479.2
75°	133.4	176.7	257.6	395.9	420.8
77.5°	89.8	133.9	212.0	335.7	368.7
80°	53.7	97.8	171.2	280.0	317.1
82.5°	27.5	65.6	132.8	234.8	268.0
85°	11.9	41.5	100.4	194.9	223.7
87.5°	3.4	23.6	73.9	157.5	181.9
90°	0.3	12.5	52.7	123.5	145.6
92.5°	0.3	6.0	37.1	93.4	110.3
95°	0.3	3.1	23.1	67.7	82.8
97.5°	0.3	1.8	14.0	48.0	60.7
100°	0.3	1.6	8.3	31.9	43.3
102.5°	0.3	1.8	5.7	20.2	28.3
105°	0.3	1.8	4.7	13.2	18.7
107.5°	0.5	1.8	4.2	9.9	13.0
110°	0.3	1.6	4.4	7.5	10.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	0.5	1.3	4.2	6.2	7.5
115°	0.3	1.0	3.6	6.0	6.2
117.5°	0.5	0.8	2.9	6.0	6.2
120°	0.5	0.5	2.3	5.7	6.5
122.5°	0.5	0.5	1.8	5.2	6.2
125°	0.3	0.5	1.6	3.9	5.4
127.5°	0.5	0.5	1.3	3.1	4.2
130°	0.5	0.5	1.0	2.3	3.1
132.5°	0.5	0.5	0.8	1.8	2.3
135°	0.5	0.5	0.5	1.3	1.8
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)