

Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: HALO

Report Number: P886956

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMW-1200LM-3000K

Issue Date: 7/9/2024

Test Information

Test Method: LM-79-2019
Report Number: P886956
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-45)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 7/9/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML412LSFL9FS1E-TIR4D25AWW-TL4RMMW-1200LM-3000K
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE WHITE TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1038.5 lumens
Efficiency: N/A
Efficacy: 59.0 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 0.81 / 1.01
Luminous Opening: Circular (Dia: 0.25' x H: 0')
CIE Type: Direct

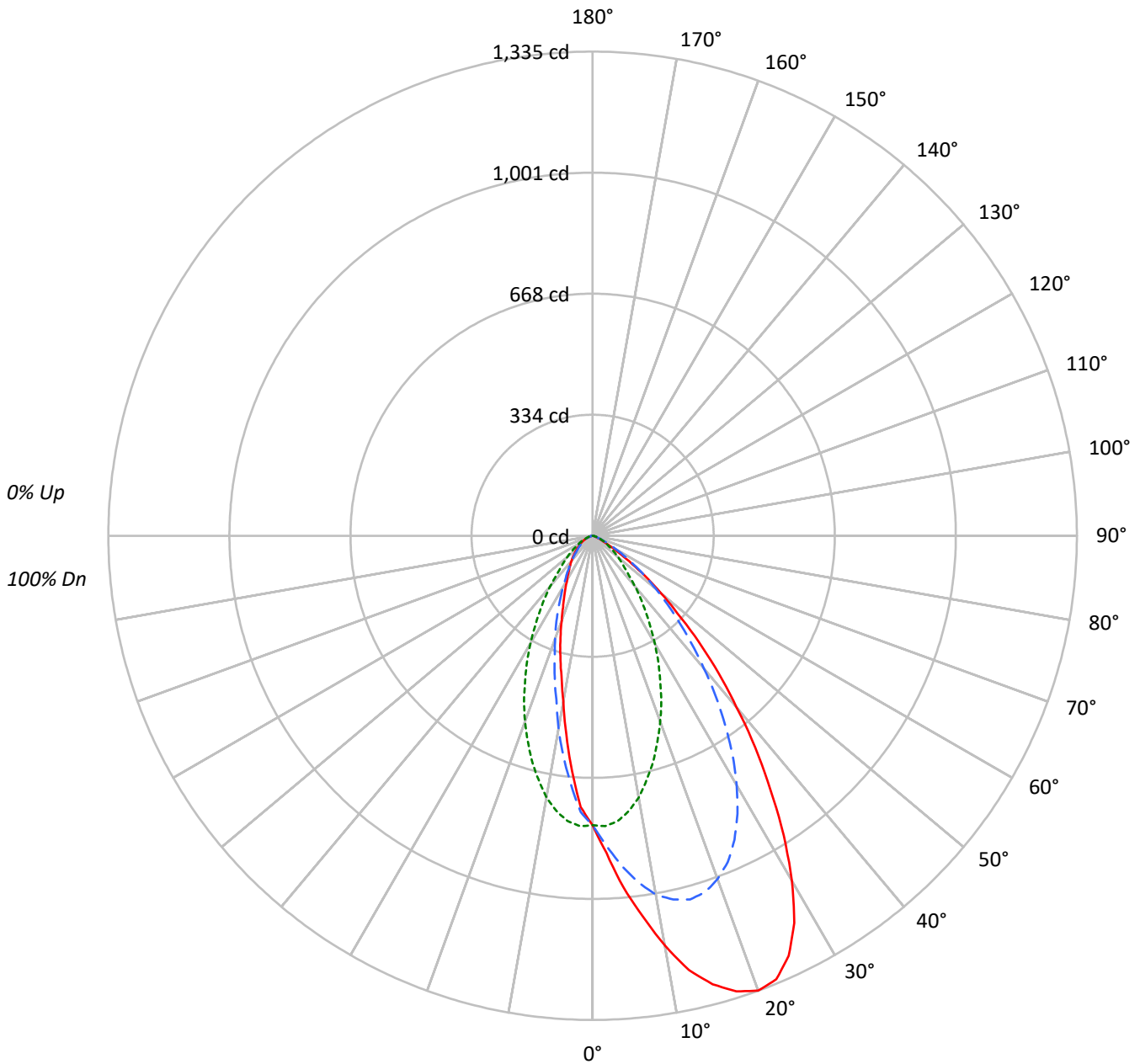
Input Watts (W): 17.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					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	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100								
1	112	109	106	103	110	107	104	102	103	101	99	99	97	96	96	94	93	91								
2	105	100	95	91	103	98	93	90	94	91	88	91	88	86	89	86	84	82								
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74								
4	92	83	77	72	91	82	76	71	80	75	71	78	73	70	76	72	69	67								
5	87	77	70	65	85	76	69	65	74	68	64	72	67	63	70	66	63	61								
6	81	71	64	59	80	70	63	59	69	63	58	67	62	58	66	61	57	56								
7	77	66	59	54	75	65	58	54	64	58	53	62	57	53	61	56	53	51								
8	72	61	54	49	71	61	54	49	59	53	49	58	53	49	57	52	49	47								
9	68	57	50	46	67	57	50	46	56	50	45	55	49	45	54	49	45	44								
10	65	53	47	42	63	53	47	42	52	46	42	51	46	42	50	45	42	40								

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	175030	175030	175030	175030	175030
5°	214219	200858	173871	151441	143275
10°	255462	223710	163056	120394	103650
15°	290626	235665	146357	91646	77867
20°	311457	235045	127131	70426	58152
25°	309236	223767	106409	54318	44615
30°	278245	201183	86570	40943	35474
35°	228823	170520	67833	31989	30062
40°	176588	136499	51897	25047	25934
45°	128075	104429	38330	20126	22359
50°	83955	77132	30907	16511	19309
55°	46870	53351	24009	14566	16554
60°	21226	32761	19428	13113	14473
65°	10689	17382	15514	11207	11778
70°	6604	9873	11220	9232	8591
75°	4321	5676	8727	6100	4321
80°	1263	2652	3915	3915	3915
85°	0	2516	5284	5284	5284

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 128075 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	75.5	7.3
10°-20°	203.5	19.6
20°-30°	265.0	25.5
30°-40°	233.3	22.5
40°-50°	149.4	14.4
50°-60°	74.2	7.1
60°-70°	27.9	2.7
70°-80°	8.2	0.8
80°-90°	1.5	0.1
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	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°	544.0	52.4
0°-40°	777.3	74.8
0°-60°	1000.9	96.4
0°-90°	1038.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1038.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	798	798	798	798	798	
5°	973	912	790	688	651	98
15°	1280	1038	645	404	343	362
25°	1278	925	440	224	184	578
35°	855	637	253	120	112	533
45°	413	337	124	65	72	320
55°	123	140	63	38	43	117
65°	21	34	30	22	23	23
75°	5	7	10	7	5	6
85°	0	1	2	2	2	0
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
0°	798.2	798.2	798.2	798.2	798.2	798.2	798.2	798.2	798.2	798.2	798.2
2.5°	875.4	877.5	870.3	863.0	858.9	849.7	838.3	821.9	813.6	801.3	778.6
5°	973.2	973.2	966.0	944.4	925.9	899.1	876.4	846.6	817.7	789.9	736.4
7.5°	1057.7	1057.7	1043.3	1022.7	984.6	942.4	900.1	851.7	807.4	765.2	683.8
10°	1147.3	1142.1	1122.6	1084.5	1032.0	977.4	911.5	846.6	788.9	732.3	624.1
12.5°	1226.6	1213.2	1182.3	1132.9	1064.9	989.7	912.5	831.1	757.0	689.0	562.3
15°	1280.2	1268.8	1227.6	1164.8	1083.4	992.8	900.1	805.4	719.9	644.7	504.6
17.5°	1317.2	1305.9	1252.3	1177.2	1082.4	978.4	874.4	771.4	677.7	594.2	444.9
20°	1334.7	1319.3	1263.7	1174.1	1063.9	950.6	836.3	726.1	630.3	544.8	391.4
22.5°	1323.4	1304.9	1241.0	1151.4	1036.1	911.5	793.0	681.8	577.8	494.3	339.9
25°	1278.1	1265.7	1198.8	1102.0	988.7	861.0	737.4	625.1	524.2	439.8	294.5
27.5°	1203.9	1182.3	1122.6	1041.2	926.9	802.3	677.7	569.5	473.7	391.4	253.4
30°	1098.9	1080.4	1034.0	956.8	855.8	733.3	616.9	507.7	419.2	341.9	217.3
32.5°	980.5	973.2	931.0	868.2	775.5	661.2	558.2	452.1	368.7	295.6	185.4
35°	854.8	844.5	815.7	754.9	682.8	591.2	488.2	394.4	321.3	253.4	155.5
37.5°	736.4	722.0	698.3	656.0	596.3	519.1	422.3	337.8	270.9	216.3	131.8
40°	616.9	609.7	588.1	556.1	511.9	441.8	361.5	289.4	232.8	181.3	110.2
42.5°	513.9	501.6	487.1	466.5	432.6	375.9	306.9	243.1	188.5	148.3	91.7
45°	413.0	403.7	399.6	385.2	359.4	314.1	256.4	196.7	155.5	123.6	76.2
47.5°	317.2	319.3	319.3	314.1	298.7	260.6	209.1	162.7	131.8	107.1	65.9
50°	246.1	244.1	249.2	253.4	240.0	212.2	166.8	135.9	112.3	90.6	56.6
52.5°	180.2	180.2	191.6	200.8	191.6	169.9	135.9	111.2	91.7	77.2	49.4
55°	122.6	127.7	137.0	154.5	149.3	129.8	110.2	88.6	75.2	62.8	41.2
57.5°	78.3	83.4	93.7	112.3	108.1	98.9	82.4	71.1	58.7	50.5	35.0
60°	48.4	51.5	60.8	76.2	78.3	71.1	60.8	52.5	49.4	44.3	31.9
62.5°	30.9	33.0	42.2	50.5	52.5	47.4	44.3	42.2	41.2	37.1	27.8
65°	20.6	21.6	26.8	34.0	34.0	33.0	30.9	33.0	33.0	29.9	22.7
67.5°	13.4	14.4	18.5	22.7	22.7	22.7	24.7	25.7	25.7	22.7	17.5
70°	10.3	10.3	12.4	14.4	15.4	15.4	16.5	19.6	19.6	17.5	14.4
72.5°	7.2	7.2	8.2	9.3	10.3	10.3	12.4	13.4	14.4	13.4	11.3
75°	5.1	5.1	5.1	6.2	6.2	7.2	8.2	9.3	10.3	10.3	8.2
77.5°	3.1	3.1	3.1	4.1	4.1	4.1	5.1	5.1	6.2	6.2	5.1
80°	1.0	1.0	2.1	2.1	2.1	2.1	3.1	3.1	3.1	3.1	3.1
82.5°	0.0	0.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	2.1	2.1
85°	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	2.1	2.1	2.1
87.5°	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	798.2	798.2	798.2
2.5°	762.1	747.7	748.7
5°	688.0	656.0	650.9
7.5°	613.8	566.4	553.1
10°	540.7	485.1	465.5
12.5°	462.4	415.0	396.5
15°	403.7	358.4	343.0
17.5°	347.1	309.0	294.5
20°	301.8	266.7	249.2
22.5°	262.6	226.6	213.2
25°	224.5	192.6	184.4
27.5°	190.5	164.8	160.7
30°	161.7	143.2	140.1
32.5°	138.0	125.6	126.7
35°	119.5	111.2	112.3
37.5°	103.0	96.8	100.9
40°	87.5	86.5	90.6
42.5°	76.2	77.2	81.4
45°	64.9	69.0	72.1
47.5°	55.6	62.8	63.9
50°	48.4	55.6	56.6
52.5°	43.3	49.4	49.4
55°	38.1	43.3	43.3
57.5°	34.0	37.1	38.1
60°	29.9	30.9	33.0
62.5°	25.7	26.8	27.8
65°	21.6	22.7	22.7
67.5°	17.5	18.5	18.5
70°	14.4	14.4	13.4
72.5°	9.3	10.3	8.2
75°	7.2	6.2	5.1
77.5°	4.1	4.1	3.1
80°	3.1	3.1	3.1
82.5°	3.1	3.1	2.1
85°	2.1	2.1	2.1
87.5°	1.0	1.0	1.0
90°	0.0	0.0	0.0

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report



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Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report





— 0°-180° - - 45°-225° - - - - 90°-270°

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