

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: P886978

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4SWSL-1200LM-4000K

Issue Date: 7/10/2024

Test Information

Test Method: LM-79-2019
Report Number: P886978
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-58)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 7/10/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML412LSFL9FS1E-TIR4D25AWW-TL4SWSL-1200LM-4000K
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, METALLIC SILVER TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: -

Summary

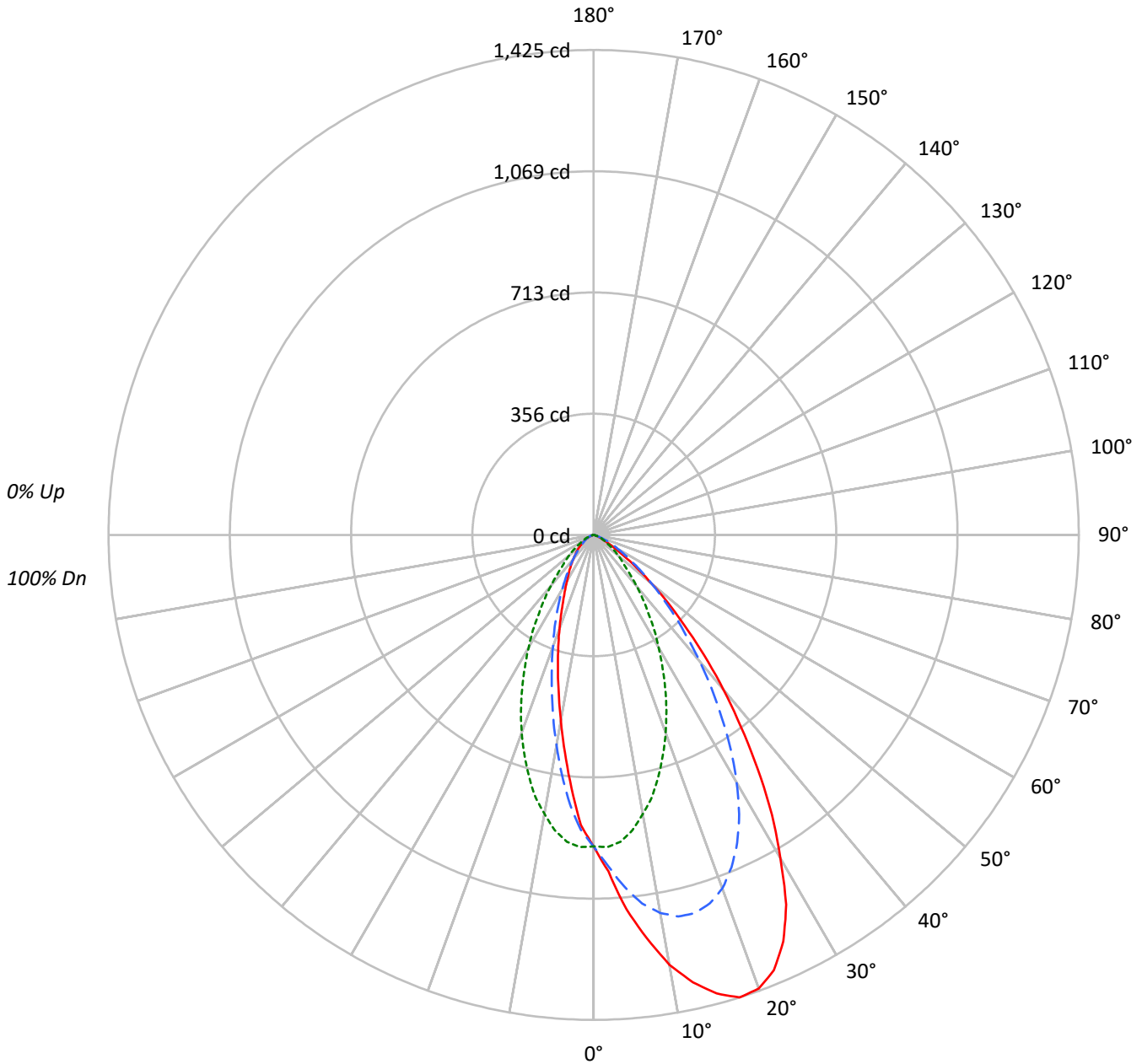
Lumens per Lamp: N/A
Luminaire Lumens: 1101.6 lumens
Efficiency: N/A
Efficacy: 62.6 lumens/watt
Spacing Criteria (0/90/45): 1.08 / 0.8 / 0.97
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

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	113	109	106	104	110	107	105	102	103	101	99	99	98	96	96	95	93	91								
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	85	83								
3	99	92	86	81	97	90	85	81	88	83	79	85	81	78	83	79	77	75								
4	93	84	78	73	91	83	77	72	81	76	72	79	74	71	77	73	70	68								
5	87	78	71	66	86	77	70	66	75	69	65	73	68	64	71	67	64	62								
6	82	72	65	60	81	71	65	60	70	64	59	68	63	59	67	62	59	57								
7	77	67	60	55	76	66	60	55	65	59	55	63	58	54	62	58	54	52								
8	73	62	55	51	72	62	55	51	60	55	50	59	54	50	58	54	50	48								
9	69	58	52	47	68	58	51	47	57	51	47	56	50	47	55	50	46	45								
10	65	55	48	44	64	54	48	44	53	47	44	52	47	43	52	47	43	42								

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	88641	88641	88641	88641	88641
5°	107378	100970	88007	77359	72516
10°	126140	110956	81844	61707	54526
15°	139919	115397	73675	47378	40609
20°	146227	114000	63763	36041	30227
25°	140849	106671	53103	27439	22468
30°	122646	93992	42698	20672	17450
35°	99305	77652	32972	15445	14393
40°	74992	61208	24761	11887	11748
45°	51842	46074	17893	9097	9850
50°	33021	33428	14333	7008	8003
55°	18866	23164	10657	5979	6536
60°	9436	15975	7924	5154	5154
65°	5318	10533	6350	4309	4057
70°	3144	5792	4079	3456	2832
75°	2059	2882	2470	2059	823
80°	614	1227	614	0	0
85°	0	0	1223	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 10°
 Vertical Angle: 45°
 Luminance: 52294 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	86.2	7.8
10°-20°	228.6	20.8
20°-30°	287.4	26.1
30°-40°	242.7	22.0
40°-50°	148.9	13.5
50°-60°	72.4	6.6
60°-70°	28.3	2.6
70°-80°	6.9	0.6
80°-90°	0.2	0.0
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°	602.2	54.7
0°-40°	845.0	76.7
0°-60°	1066.2	96.8
0°-90°	1101.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1101.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	915	915	915	915	915	
5°	1104	1038	905	796	746	110
15°	1395	1151	735	472	405	393
25°	1318	998	497	257	210	596
35°	840	657	279	131	122	523
45°	378	336	131	66	72	299
55°	112	137	63	35	39	106
65°	23	46	28	19	18	25
75°	6	8	7	6	2	6
85°	0	0	1	0	0	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°	915.0	915.0	915.0	915.0	915.0	915.0	915.0	915.0	915.0	915.0	915.0
2.5°	989.1	997.9	991.3	991.3	978.0	969.2	955.9	944.8	932.7	918.3	890.6
5°	1104.2	1097.5	1085.3	1073.2	1051.0	1025.6	997.9	964.7	936.0	905.0	841.9
7.5°	1194.9	1190.4	1177.2	1150.6	1115.2	1069.9	1022.3	972.5	923.8	875.1	786.6
10°	1282.3	1270.1	1250.2	1209.3	1158.4	1097.5	1031.1	965.9	898.4	832.0	722.5
12.5°	1346.4	1333.2	1304.4	1252.4	1188.2	1108.6	1026.7	945.9	860.8	789.9	653.9
15°	1395.1	1385.2	1344.2	1281.2	1198.2	1103.0	1007.9	912.7	819.8	734.6	584.2
17.5°	1425.0	1409.5	1361.9	1284.5	1188.2	1082.0	974.7	870.7	772.2	677.1	517.8
20°	1418.4	1404.0	1354.2	1267.9	1162.8	1048.8	931.6	816.5	712.5	618.5	454.7
22.5°	1384.1	1373.0	1317.7	1225.9	1117.4	996.8	876.2	757.9	651.6	557.6	395.0
25°	1317.7	1300.0	1246.9	1166.1	1059.9	936.0	808.8	697.0	588.6	496.8	337.4
27.5°	1224.7	1202.6	1156.1	1084.2	982.5	868.5	741.3	628.4	527.7	437.0	289.9
30°	1096.4	1089.8	1043.3	988.0	892.8	787.7	673.8	558.7	464.7	381.7	246.7
32.5°	974.7	961.4	929.3	872.9	798.8	702.5	596.3	497.9	410.5	331.9	209.1
35°	839.7	834.2	802.1	765.6	699.2	614.0	524.4	435.9	349.6	278.8	177.0
37.5°	709.2	708.1	681.5	660.5	600.8	535.5	450.3	367.3	297.6	236.8	146.0
40°	593.0	586.4	570.9	547.6	511.1	456.9	381.7	308.7	247.8	195.8	120.6
42.5°	480.2	476.8	469.1	454.7	425.9	381.7	322.0	257.8	202.5	160.4	98.5
45°	378.4	381.7	381.7	372.8	354.0	318.6	265.5	210.2	164.8	130.6	80.8
47.5°	297.6	295.4	299.8	297.6	289.9	260.0	214.6	168.2	138.3	111.7	68.6
50°	219.1	226.8	231.2	240.1	233.4	210.2	170.4	139.4	116.2	95.1	58.6
52.5°	161.5	164.8	175.9	192.5	188.1	166.0	137.2	117.3	96.3	78.6	49.8
55°	111.7	115.1	131.7	147.1	144.9	129.4	111.7	95.1	77.4	63.1	40.9
57.5°	73.0	76.3	90.7	112.8	112.8	102.9	90.7	75.2	60.8	49.8	34.3
60°	48.7	50.9	63.1	79.7	83.0	81.9	71.9	56.4	47.6	40.9	28.8
62.5°	32.1	34.3	44.3	56.4	63.1	63.1	53.1	43.1	38.7	34.3	24.3
65°	23.2	24.3	31.0	37.6	45.4	46.5	38.7	34.3	31.0	27.7	21.0
67.5°	16.6	16.6	22.1	26.6	32.1	31.0	28.8	25.4	23.2	19.9	16.6
70°	11.1	12.2	14.4	17.7	21.0	19.9	19.9	18.8	16.6	14.4	12.2
72.5°	7.7	8.9	10.0	12.2	13.3	13.3	13.3	12.2	11.1	10.0	8.9
75°	5.5	5.5	5.5	6.6	7.7	7.7	8.9	7.7	6.6	6.6	5.5
77.5°	3.3	3.3	3.3	3.3	4.4	4.4	4.4	3.3	3.3	2.2	3.3
80°	1.1	1.1	1.1	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	1.1	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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°	915.0	915.0	915.0
2.5°	867.4	854.1	853.0
5°	795.5	763.4	745.7
7.5°	711.4	666.0	645.0
10°	627.3	573.1	554.3
12.5°	548.8	491.2	473.5
15°	472.4	417.1	404.9
17.5°	408.2	357.4	345.2
20°	349.6	306.5	293.2
22.5°	300.9	260.0	246.7
25°	256.7	221.3	210.2
27.5°	219.1	188.1	181.4
30°	184.8	160.4	156.0
32.5°	154.9	138.3	137.2
35°	130.6	118.4	121.7
37.5°	112.8	102.9	106.2
40°	94.0	89.6	92.9
42.5°	79.7	77.4	81.9
45°	66.4	68.6	71.9
47.5°	56.4	60.8	63.1
50°	46.5	53.1	53.1
52.5°	39.8	46.5	45.4
55°	35.4	39.8	38.7
57.5°	31.0	33.2	32.1
60°	26.6	27.7	26.6
62.5°	22.1	23.2	22.1
65°	18.8	18.8	17.7
67.5°	15.5	14.4	14.4
70°	12.2	11.1	10.0
72.5°	8.9	7.7	5.5
75°	5.5	4.4	2.2
77.5°	2.2	1.1	0.0
80°	0.0	0.0	0.0
82.5°	0.0	0.0	0.0
85°	0.0	0.0	0.0
87.5°	0.0	0.0	0.0
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



Report Generated By 670245859 / DESKTOP-T8S5UU9

Signify Classified - Internal
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Peachtree City, GA 30269

Scaled Data Report





— 0°-180° - - 45°-225° - - - 90°-270°

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