

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: P887078

Luminaire Tested: ML412LSFL9FS1E-TIR4D55WFL-TL4SDSL-1200LM-4000K

Issue Date: 7/10/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887078  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-55)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/10/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL9FS1E-TIR4D55WFL-TL4SDSL-1200LM-4000K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH 55D TIR, METALLIC SILVER TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

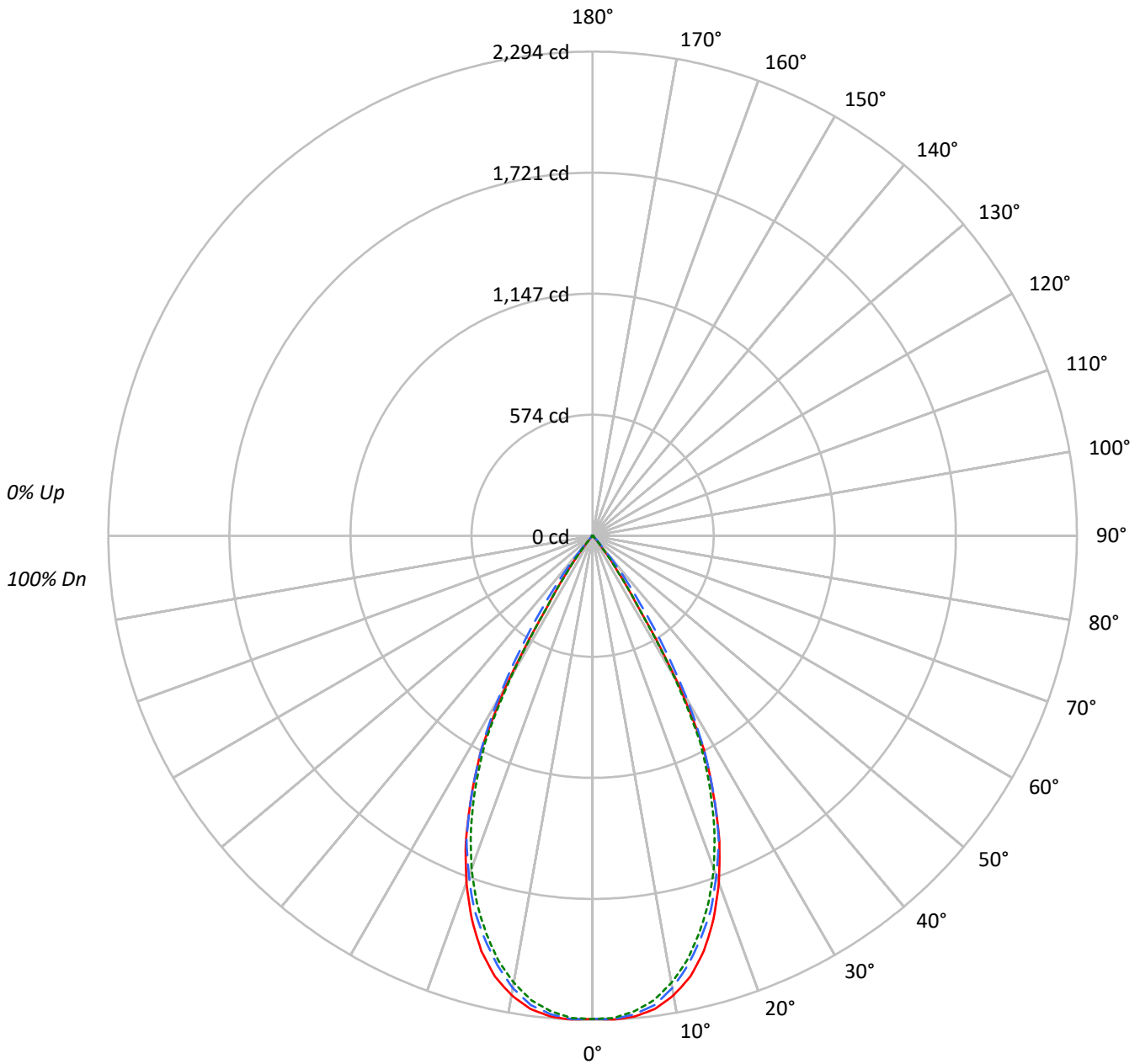
Lumens per Lamp: N/A  
Luminaire Lumens: 1595.1 lumens  
Efficiency: N/A  
Efficacy: 90.6 lumens/watt  
Spacing Criteria (0/90/45): 0.87 / 0.85 / 0.82  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

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									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	0																
RCR																																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100																			
1	114	112	109	107	112	109	107	105	105	104	102	102	100	99	98	97	96	95																			
2	109	105	101	98	107	103	100	97	100	97	95	97	95	93	94	92	91	89																			
3	104	99	94	91	102	97	93	90	95	91	88	92	89	87	90	88	86	84																			
4	100	93	88	84	98	92	87	84	90	86	83	88	85	82	86	83	81	80																			
5	95	88	83	79	94	87	82	79	85	81	78	84	80	77	82	79	77	75																			
6	91	83	78	74	90	83	78	74	81	77	73	80	76	73	79	75	72	71																			
7	87	79	74	70	86	78	73	70	77	73	69	76	72	69	75	71	69	67																			
8	84	75	70	66	83	75	69	66	74	69	66	73	68	65	72	68	65	64																			
9	80	71	66	63	79	71	66	62	70	65	62	69	65	62	68	65	62	61																			
10	77	68	63	59	76	68	63	59	67	62	59	66	62	59	66	62	59	58																			

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	221719	221719	221719
5°	222352	221272	219979
10°	217407	214033	211535
15°	204246	198249	195481
20°	180185	176649	172886
25°	144965	145082	140229
30°	90944	99982	86861
35°	24989	46312	24859
40°	4338	10635	3073
45°	904	2726	754
50°	663	663	663
55°	557	557	557
60°	426	426	426
65°	252	504	252
70°	312	312	312
75°	412	412	412
80°	614	614	614
85°	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 2726 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	214.2	13.4
10°-20°	552.2	34.6
20°-30°	603.1	37.8
30°-40°	207.7	13.0
40°-50°	12.1	0.8
50°-60°	2.6	0.2
60°-70°	1.8	0.1
70°-80°	1.2	0.1
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°	1369.5	85.9
0°-40°	1577.2	98.9
0°-60°	1592.0	99.8
0°-90°	1595.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1595.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2289	2289	2289	2289	2289	
5°	2286	2284	2275	2273	2262	216
15°	2036	2012	1977	1961	1949	564
25°	1356	1363	1357	1333	1312	606
35°	211	242	392	239	210	171
45°	7	8	20	7	6	7
55°	3	3	3	3	3	3
65°	1	2	2	2	1	1
75°	1	1	1	1	1	1
85°	0	0	0	0	0	0
90°	0	0	0	0	0	0



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2288.7	2288.7	2288.7	2288.7	2288.7
2.5°	2294.2	2289.8	2292.0	2290.9	2286.5
5°	2286.5	2284.2	2275.4	2273.2	2262.1
7.5°	2261.0	2257.7	2242.2	2230.0	2220.1
10°	2210.1	2195.8	2175.8	2154.8	2150.4
12.5°	2139.3	2119.4	2084.0	2061.9	2061.9
15°	2036.5	2012.1	1976.7	1961.2	1949.1
17.5°	1903.7	1890.5	1860.6	1834.0	1824.1
20°	1747.8	1746.6	1713.5	1690.2	1677.0
22.5°	1568.6	1566.3	1560.8	1530.9	1506.6
25°	1356.2	1362.8	1357.3	1332.9	1311.9
27.5°	1140.5	1147.1	1142.7	1110.6	1101.7
30°	813.0	881.6	893.8	848.4	776.5
32.5°	407.1	526.5	633.8	512.2	404.9
35°	211.3	242.3	391.6	238.9	210.2
37.5°	99.6	118.4	224.6	116.1	97.3
40°	34.3	49.8	84.1	49.8	24.3
42.5°	8.8	17.7	43.1	13.3	10.0
45°	6.6	7.7	19.9	6.6	5.5
47.5°	4.4	4.4	8.8	4.4	4.4
50°	4.4	3.3	4.4	3.3	4.4
52.5°	3.3	3.3	3.3	3.3	3.3
55°	3.3	3.3	3.3	3.3	3.3
57.5°	2.2	2.2	2.2	2.2	2.2
60°	2.2	2.2	2.2	2.2	2.2
62.5°	2.2	2.2	2.2	2.2	2.2
65°	1.1	2.2	2.2	2.2	1.1
67.5°	1.1	1.1	2.2	1.1	1.1
70°	1.1	1.1	1.1	1.1	1.1
72.5°	1.1	1.1	1.1	1.1	1.1
75°	1.1	1.1	1.1	1.1	1.1
77.5°	1.1	1.1	1.1	1.1	1.1
80°	1.1	1.1	1.1	1.1	1.1
82.5°	0.0	0.0	0.0	1.1	0.0
85°	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	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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Scaled Data Report







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

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