

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: P887072

Luminaire Tested: ML412LSFL9FS1E-TIR4D55WFL-TL4SDMW-1200LM-3500K

Issue Date: 7/10/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887072  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-54)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/10/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL9FS1E-TIR4D55WFL-TL4SDMW-1200LM-3500K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH 55D TIR, MATTE WHITE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

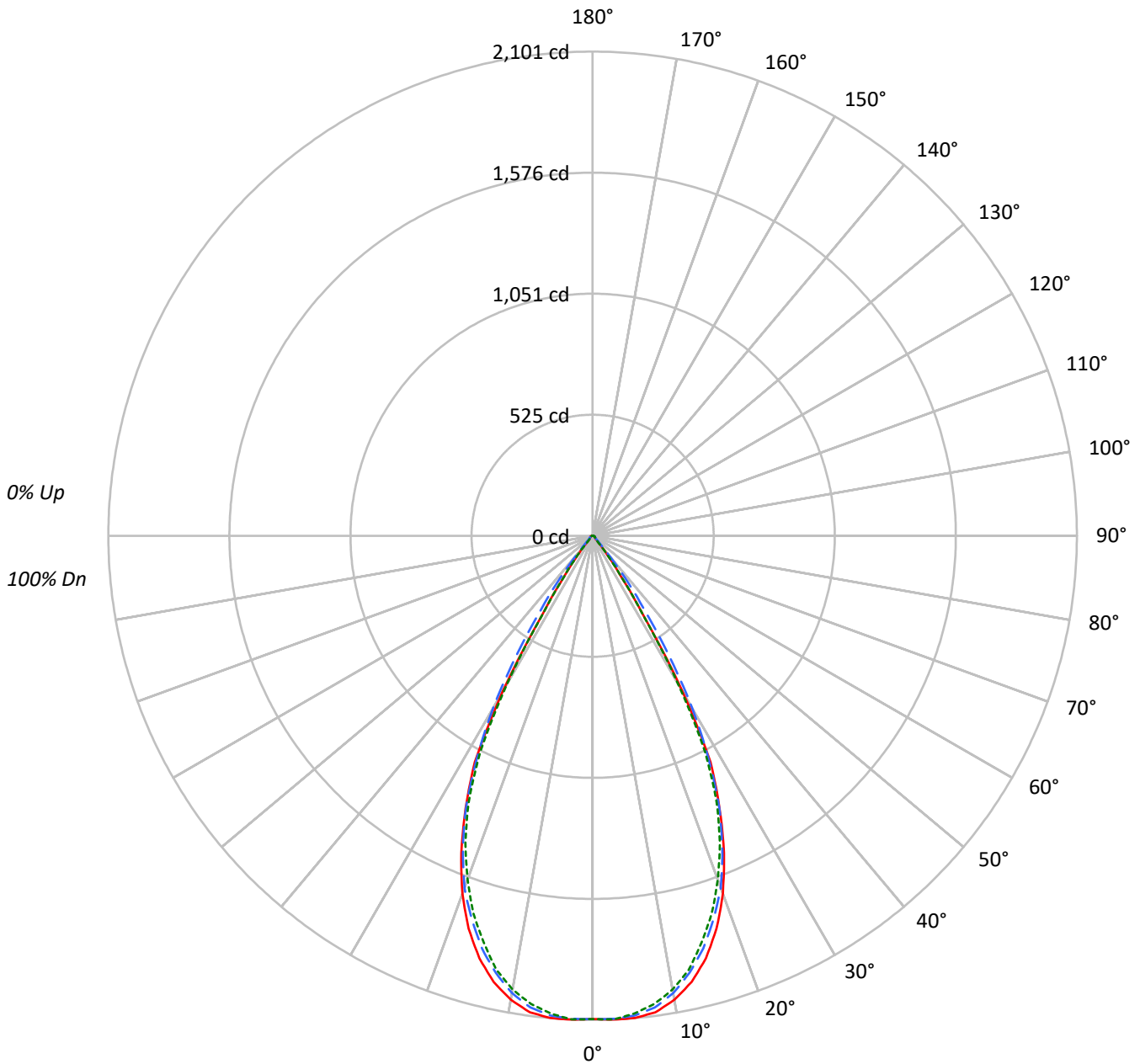
Lumens per Lamp: N/A  
Luminaire Lumens: 1547.1 lumens  
Efficiency: N/A  
Efficacy: 87.9 lumens/watt  
Spacing Criteria (0/90/45): 0.89 / 0.88 / 0.83  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

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				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	0
RCR																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100			
1	114	111	109	107	111	109	107	105	105	103	102	101	100	99	98	97	96	94			
2	109	104	100	97	106	102	99	96	99	96	94	96	94	92	93	92	90	88			
3	104	98	93	89	102	96	92	89	94	90	87	91	88	86	89	87	85	83			
4	99	92	87	83	97	91	86	82	89	85	81	87	83	81	85	82	80	78			
5	95	87	81	77	93	86	81	77	84	80	76	82	79	76	81	78	75	74			
6	90	82	77	73	89	81	76	72	80	75	72	78	74	71	77	74	71	70			
7	86	78	72	68	85	77	72	68	76	71	68	75	71	67	74	70	67	66			
8	83	74	68	64	81	73	68	64	72	67	64	71	67	64	70	66	64	62			
9	79	70	65	61	78	70	64	61	69	64	61	68	64	60	67	63	60	59			
10	76	67	61	58	75	66	61	58	66	61	58	65	60	57	64	60	57	56			

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

	0°	45°	90°
0°	203157	203157	203157
5°	204245	203204	202378
10°	201147	198215	196641
15°	190326	185943	183165
20°	170247	167608	163546
25°	139257	138915	135954
30°	87062	96604	82890
35°	24587	45898	25474
40°	5387	12267	4312
45°	2343	4233	2192
50°	2246	2411	2246
55°	2162	2348	2162
60°	2267	2267	2267
65°	2201	2453	2201
70°	2124	2408	2124
75°	2396	2396	2396
80°	2399	2399	2399
85°	2334	2334	2334

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 4233 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	197.3	12.8
10°-20°	516.8	33.4
20°-30°	575.9	37.2
30°-40°	205.7	13.3
40°-50°	20.4	1.3
50°-60°	12.0	0.8
60°-70°	9.9	0.6
70°-80°	6.6	0.4
80°-90°	2.3	0.2
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°	1290.1	83.4
0°-40°	1495.8	96.7
0°-60°	1528.1	98.8
0°-90°	1547.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1547.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2097	2097	2097	2097	2097	
5°	2100	2100	2090	2089	2081	199
15°	1898	1884	1854	1828	1826	527
25°	1303	1310	1300	1271	1272	581
35°	208	240	388	236	215	169
45°	17	18	31	17	16	15
55°	13	14	14	14	13	12
65°	10	11	11	10	10	10
75°	6	6	6	6	6	6
85°	2	2	2	2	2	2
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2097.1	2097.1	2097.1	2097.1	2097.1
2.5°	2101.3	2102.4	2098.1	2098.1	2100.3
5°	2100.3	2100.3	2089.6	2088.6	2081.1
7.5°	2085.4	2080.0	2065.1	2053.4	2049.1
10°	2044.8	2035.2	2015.0	1995.8	1999.0
12.5°	1983.0	1971.3	1942.5	1925.4	1928.6
15°	1897.7	1883.9	1854.0	1828.4	1826.3
17.5°	1787.9	1773.0	1744.2	1726.1	1718.6
20°	1651.4	1645.0	1625.8	1592.8	1586.4
22.5°	1489.4	1489.4	1470.2	1449.9	1442.5
25°	1302.8	1310.3	1299.6	1270.8	1271.9
27.5°	1107.7	1102.4	1087.5	1068.3	1054.4
30°	778.3	856.1	863.6	822.0	741.0
32.5°	405.1	529.9	612.0	495.8	400.9
35°	207.9	239.9	388.1	235.6	215.4
37.5°	107.7	123.7	229.2	122.6	105.5
40°	42.6	57.6	97.0	56.5	34.1
42.5°	19.2	26.7	54.4	23.5	19.2
45°	17.1	18.1	30.9	17.1	16.0
47.5°	16.0	16.0	20.3	16.0	14.9
50°	14.9	14.9	16.0	14.9	14.9
52.5°	13.9	13.9	14.9	13.9	13.9
55°	12.8	13.9	13.9	13.9	12.8
57.5°	11.7	12.8	12.8	12.8	11.7
60°	11.7	11.7	11.7	11.7	11.7
62.5°	10.7	10.7	10.7	10.7	10.7
65°	9.6	10.7	10.7	9.6	9.6
67.5°	8.5	9.6	9.6	9.6	8.5
70°	7.5	8.5	8.5	8.5	7.5
72.5°	6.4	7.5	7.5	7.5	6.4
75°	6.4	6.4	6.4	6.4	6.4
77.5°	5.3	5.3	5.3	5.3	5.3
80°	4.3	4.3	4.3	4.3	4.3
82.5°	3.2	3.2	3.2	3.2	3.2
85°	2.1	2.1	2.1	2.1	2.1
87.5°	1.1	1.1	1.1	1.1	1.1
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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