

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: P887048

Luminaire Tested: ML412LSFL9FS1E-TIR4D40FL-TL4SDSL-1200LM-4000K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887048  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-52)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL9FS1E-TIR4D40FL-TL4SDSL-1200LM-4000K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH 40D TIR, METALLIC SILVER TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

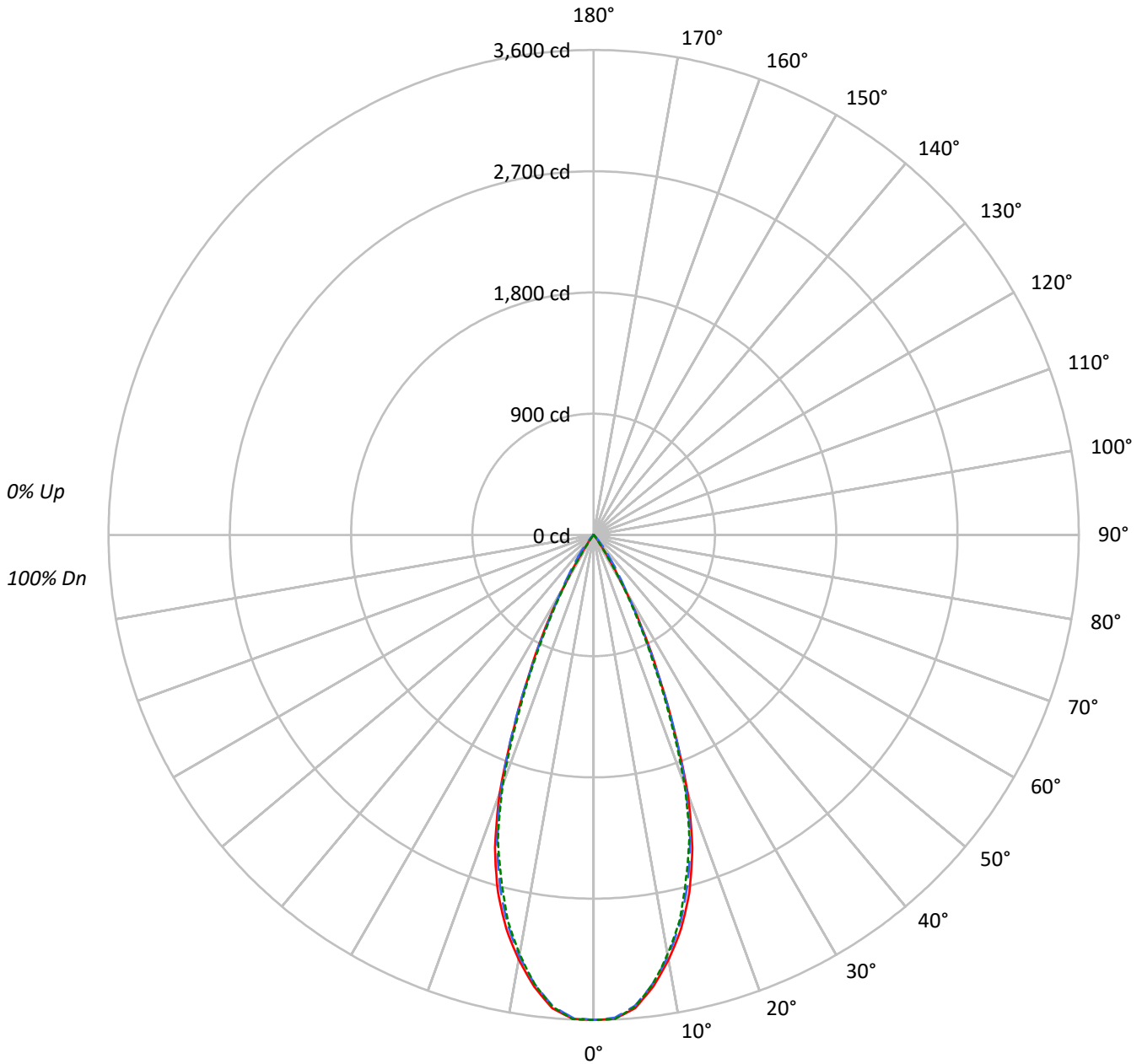
Lumens per Lamp: N/A  
Luminaire Lumens: 1693.6 lumens  
Efficiency: N/A  
Efficacy: 96.2 lumens/watt  
Spacing Criteria (0/90/45): 0.7 / 0.69 / 0.64  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

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	114	112	110	108	112	110	108	106	106	104	103	102	101	100	99	98	97	95								
2	110	106	103	100	108	104	101	99	101	99	97	98	96	94	96	94	93	91								
3	106	101	96	93	104	99	95	92	97	94	91	94	92	90	92	90	88	87								
4	102	96	91	88	100	95	90	87	92	89	86	91	88	85	89	86	84	83								
5	98	91	86	83	96	90	86	83	89	85	82	87	84	81	86	83	80	79								
6	94	87	82	79	93	86	82	78	85	81	78	84	80	77	82	79	77	76								
7	91	83	78	75	90	83	78	75	82	77	74	80	77	74	79	76	74	73								
8	88	80	75	72	87	79	75	72	78	74	71	77	74	71	77	73	71	70								
9	84	77	72	69	84	76	72	68	75	71	68	75	71	68	74	70	68	67								
10	82	74	69	66	81	73	69	66	73	68	66	72	68	65	71	68	65	64								

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

	0°	45°	90°
0°	348790	348790	348790
5°	343024	341186	341730
10°	314872	312374	310849
15°	275314	269878	265435
20°	210453	206113	203154
25°	119332	117911	112951
30°	49141	53962	46658
35°	9816	24729	8633
40°	1960	8954	1960
45°	754	1973	603
50°	497	663	497
55°	372	372	372
60°	426	426	213
65°	252	252	252
70°	312	312	312
75°	412	412	412
80°	0	614	614
85°	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 1973 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	324.5	19.2
10°-20°	737.4	43.5
20°-30°	511.4	30.2
30°-40°	106.8	6.3
40°-50°	8.9	0.5
50°-60°	2.2	0.1
60°-70°	1.3	0.1
70°-80°	1.1	0.1
80°-90°	0.1	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°	1573.2	92.9
0°-40°	1680.0	99.2
0°-60°	1691.0	99.8
0°-90°	1693.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1693.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3600	3600	3600	3600	3600	
5°	3527	3518	3508	3510	3514	326
15°	2745	2733	2691	2664	2647	749
25°	1116	1116	1103	1077	1057	519
35°	83	130	209	120	73	82
45°	6	6	14	6	4	5
55°	2	2	2	2	2	2
65°	1	1	1	1	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°	3600.4	3600.4	3600.4	3600.4	3600.4
2.5°	3594.8	3593.7	3587.1	3590.4	3597.1
5°	3527.4	3518.5	3508.5	3509.6	3514.1
7.5°	3381.3	3386.8	3360.3	3365.8	3362.5
10°	3200.9	3189.9	3175.5	3170.0	3160.0
12.5°	2996.3	2983.0	2957.5	2934.3	2937.6
15°	2745.1	2732.9	2690.9	2664.3	2646.6
17.5°	2435.3	2420.9	2383.3	2373.3	2361.2
20°	2041.4	2031.4	1999.3	1971.7	1970.6
22.5°	1542.4	1561.2	1559.0	1513.6	1495.9
25°	1116.4	1116.4	1103.1	1076.6	1056.7
27.5°	772.3	755.7	731.4	723.6	704.8
30°	439.3	472.5	482.4	458.1	417.1
32.5°	206.9	274.4	322.0	257.8	181.5
35°	83.0	129.5	209.1	119.5	73.0
37.5°	36.5	56.4	130.6	52.0	34.3
40°	15.5	25.4	70.8	24.3	15.5
42.5°	8.9	12.2	34.3	11.1	7.7
45°	5.5	5.5	14.4	5.5	4.4
47.5°	3.3	4.4	6.6	3.3	3.3
50°	3.3	3.3	4.4	3.3	3.3
52.5°	2.2	2.2	3.3	2.2	2.2
55°	2.2	2.2	2.2	2.2	2.2
57.5°	2.2	2.2	2.2	2.2	2.2
60°	2.2	2.2	2.2	2.2	1.1
62.5°	1.1	1.1	2.2	1.1	1.1
65°	1.1	1.1	1.1	1.1	1.1
67.5°	1.1	1.1	1.1	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°	0.0	1.1	1.1	1.1	1.1
82.5°	0.0	0.0	0.0	0.0	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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(END OF REPORT)