

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: HALO

Report Number: P601298

Luminaire Tested: **ML410LSFL9FS1E - TIR4D40FL - TL43R2G\_ TL44S2G\_ 5000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601298  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML410LSFL9FS1E - TIR4D40FL - TL43R2G\_ TL44S2G\_ 5000K  
 Description: RETROFIT, 40D OPTIC, DIFFUSE CLEAR LENS TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 5000K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 1197.2 lumens  
 Efficiency: N/A  
 Efficacy: 99.8 lumens/watt  
 Spacing Criteria (0/90/45): 0.67 / 0.67 / 0.63  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

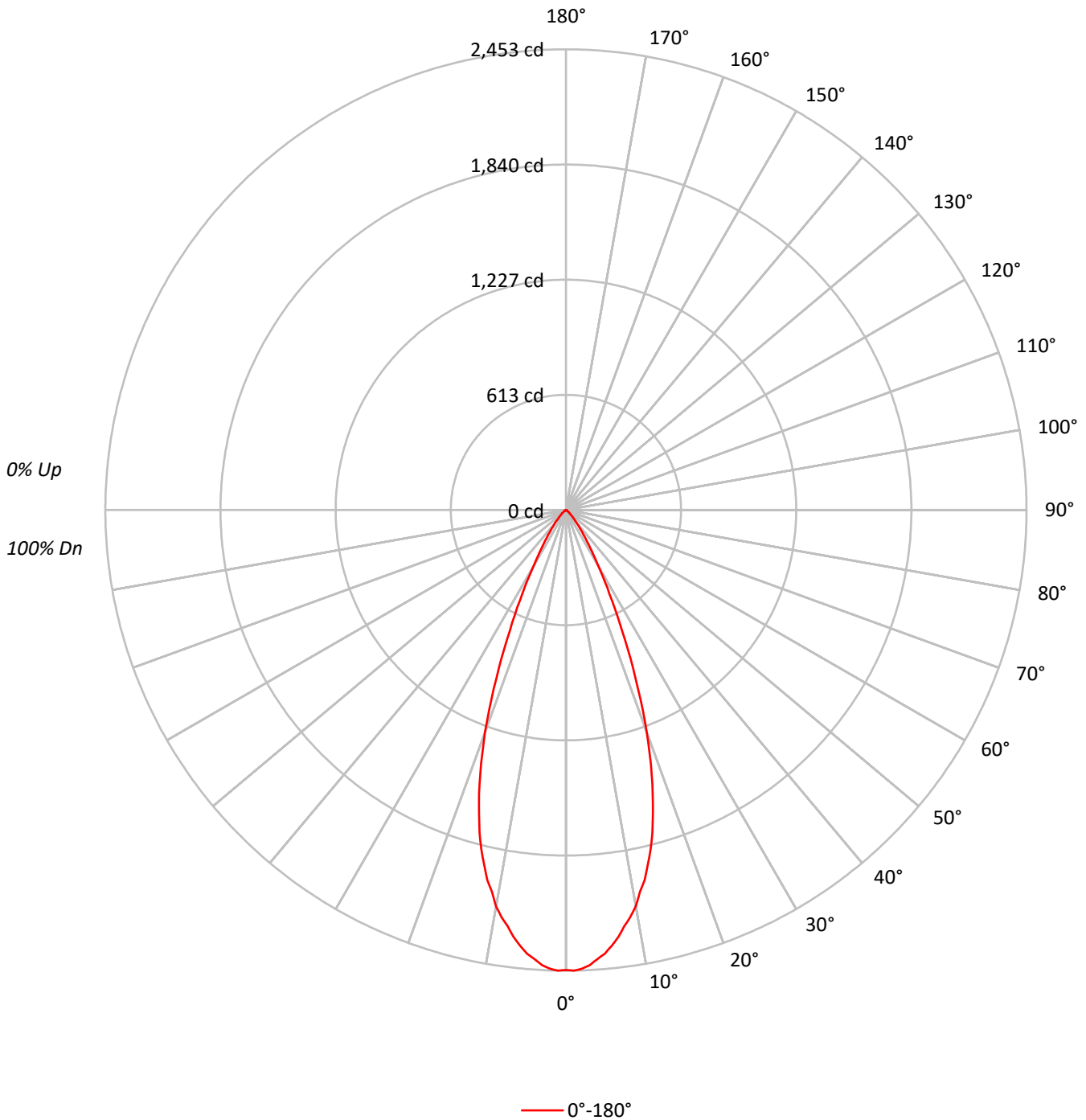
Input Watts (W): 12  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



Meas		Calibration Due Date	
Instrument	Identificatio		
Photometer	GONIO 1 11111111	4/22/2021	10/22/2021
Power Meter	XITRON 2801 IN0197	12/1/2020	12/1/2021
AC Power Source	CHROMA 61505 IN0196	12/1/2020	12/1/2021
DC Power Supply	AGILENT E3634A IN0198	11/30/2020	11/30/2021
Room Thermometer	ONSET IN0143	12/1/2020	12/1/2021

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

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

	0°
0°	773214
5°	751698
10°	687060
15°	581170
20°	423365
25°	245349
30°	125901
35°	65955
40°	35573
45°	18934
50°	11151
55°	5836
60°	2842
65°	2241
70°	1385
75°	0
80°	0
85°	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	218.7	18.3
10°-20°	482.3	40.3
20°-30°	331.7	27.7
30°-40°	115.0	9.6
40°-50°	35.7	3.0
50°-60°	10.7	0.9
60°-70°	2.6	0.2
70°-80°	0.6	0.0
80°-90°	0.0	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°	1032.6	86.3
0°-40°	1147.6	95.9
0°-60°	1194.0	99.7
0°-90°	1197.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1197.2	100.0

**CANDELA DISTRIBUTION:**

	0°	Flux
0°	2449	
5°	2372	219
15°	1778	482
25°	704	332
35°	171	115
45°	42	36
55°	11	11
65°	3	3
75°	0	1
85°	0	0
90°	0	

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**CANDELA DISTRIBUTION (FULL):**

0°	
0°	2448.7
1°	2453.2
2°	2444.1
3°	2426.0
4°	2397.2
5°	2371.5
6°	2333.6
7°	2289.7
8°	2236.7
9°	2194.3
10°	2142.8
11°	2070.1
12°	2014.1
13°	1938.4
14°	1862.6
15°	1777.8
17.5°	1532.5
20°	1259.9
22.5°	967.7
25°	704.2
27.5°	499.7
30°	345.3
32.5°	242.3
35°	171.1
37.5°	122.7
40°	86.3
42.5°	60.6
45°	42.4
47.5°	30.3
50°	22.7
52.5°	16.7
55°	10.6
57.5°	7.6
60°	4.5
62.5°	3.0
65°	3.0
67.5°	1.5
70°	1.5
72.5°	1.5
75°	0.0
77.5°	0.0
80°	0.0
82.5°	0.0
85°	0.0
87.5°	0.0

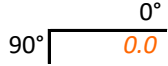
Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

  
NVLAP Lab Code: 200050-0



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CANDELA DISTRIBUTION (continued):



(END OF REPORT)