

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: P601316

Luminaire Tested: **ML410LSWFL9FS1E - TIR4D55WFL - TL43R2G\_ TL44S2G\_ 3500K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601316  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML410LSWFL9FS1E - TIR4D55WFL - TL43R2G\_ TL44S2G\_ 3500K  
 Description: RETROFIT, 55D OPTIC, DIFFUSE CLEAR LENS TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 3500K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 1161.3 lumens  
 Efficiency: N/A  
 Efficacy: 96.8 lumens/watt  
 Spacing Criteria (0/90/45): 0.9 / 0.9 / 0.83  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

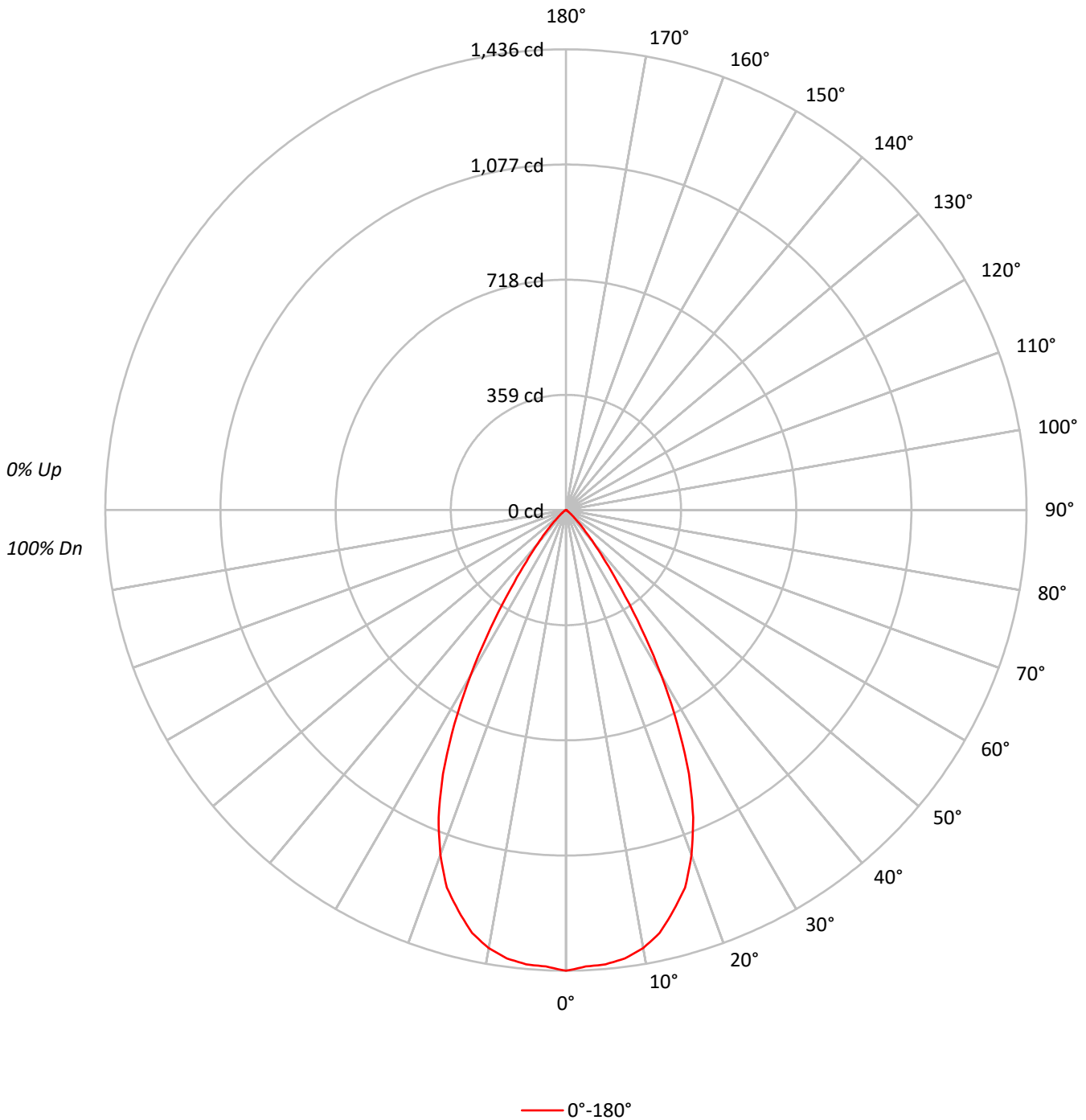
Input Watts (W): 12  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



Meas			
Instrument	Identificatio		Calibration Due Date
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	111	109	107	111	109	107	105	105	103	102	101	100	99	98	97	96	94
2	108	104	100	97	106	102	99	96	99	96	93	96	94	91	93	91	90	88
3	103	97	92	89	101	96	91	88	93	89	86	91	88	85	89	86	84	82
4	98	91	86	82	97	90	85	81	88	84	80	86	82	79	84	81	79	77
5	94	86	80	76	92	85	80	76	83	78	75	81	77	74	80	76	74	72
6	89	81	75	71	88	80	75	71	78	74	70	77	73	70	76	72	69	68
7	85	76	70	66	84	76	70	66	74	69	66	73	69	66	72	68	65	64
8	81	72	66	62	80	71	66	62	70	65	62	69	65	62	68	64	61	60
9	77	68	63	59	76	68	62	59	67	62	58	66	61	58	65	61	58	57
10	74	65	59	55	73	64	59	55	64	59	55	63	58	55	62	58	55	54

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

	0°
0°	453407
5°	450543
10°	444594
15°	422949
20°	384553
25°	315832
30°	216289
35°	115181
40°	55606
45°	25275
50°	11397
55°	5615
60°	2779
65°	1121
70°	1385
75°	1830
80°	0
85°	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	134.6	11.6
10°-20°	361.1	31.1
20°-30°	405.0	34.9
30°-40°	198.7	17.1
40°-50°	49.0	4.2
50°-60°	9.8	0.8
60°-70°	2.2	0.2
70°-80°	1.0	0.1
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°	900.7	77.6
0°-40°	1099.4	94.7
0°-60°	1158.1	99.7
0°-90°	1161.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1161.3	100.0

**CANDELA DISTRIBUTION:**

	0°	Flux
0°	1436	
5°	1421	135
15°	1294	361
25°	906	405
35°	299	199
45°	57	49
55°	10	10
65°	2	2
75°	2	1
85°	0	0
90°	0	

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**CANDELA DISTRIBUTION (FULL):**

	0°
0°	1435.9
2.5°	1424.3
5°	1421.4
7.5°	1409.8
10°	1386.6
12.5°	1350.3
15°	1293.8
17.5°	1234.3
20°	1144.4
22.5°	1037.1
25°	906.5
27.5°	752.8
30°	593.2
32.5°	436.6
35°	298.8
37.5°	201.6
40°	134.9
42.5°	88.5
45°	56.6
47.5°	34.8
50°	23.2
52.5°	14.5
55°	10.2
57.5°	5.8
60°	4.4
62.5°	2.9
65°	1.5
67.5°	1.5
70°	1.5
72.5°	1.5
75°	1.5
77.5°	0.0
80°	0.0
82.5°	0.0
85°	0.0
87.5°	0.0
90°	0.0

(END OF REPORT)