

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: P601231

Luminaire Tested: **ML408LSAWW95FS1E - TIR4D25AWW - TL41R\_ TL42S\_ 3500K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601231  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML408LSAWW95FS1E - TIR4D25AWW - TL41R\_ TL42S\_ 3500K  
 Description: RETROFIT, 25D WW OPTIC, OPEN TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 95CRI / 3500K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 628.7 lumens  
 Efficiency: N/A  
 Efficacy: 61.0 lumens/watt  
 Spacing Criteria (0/90/45): 1.31 / 0.61 / 0.81  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

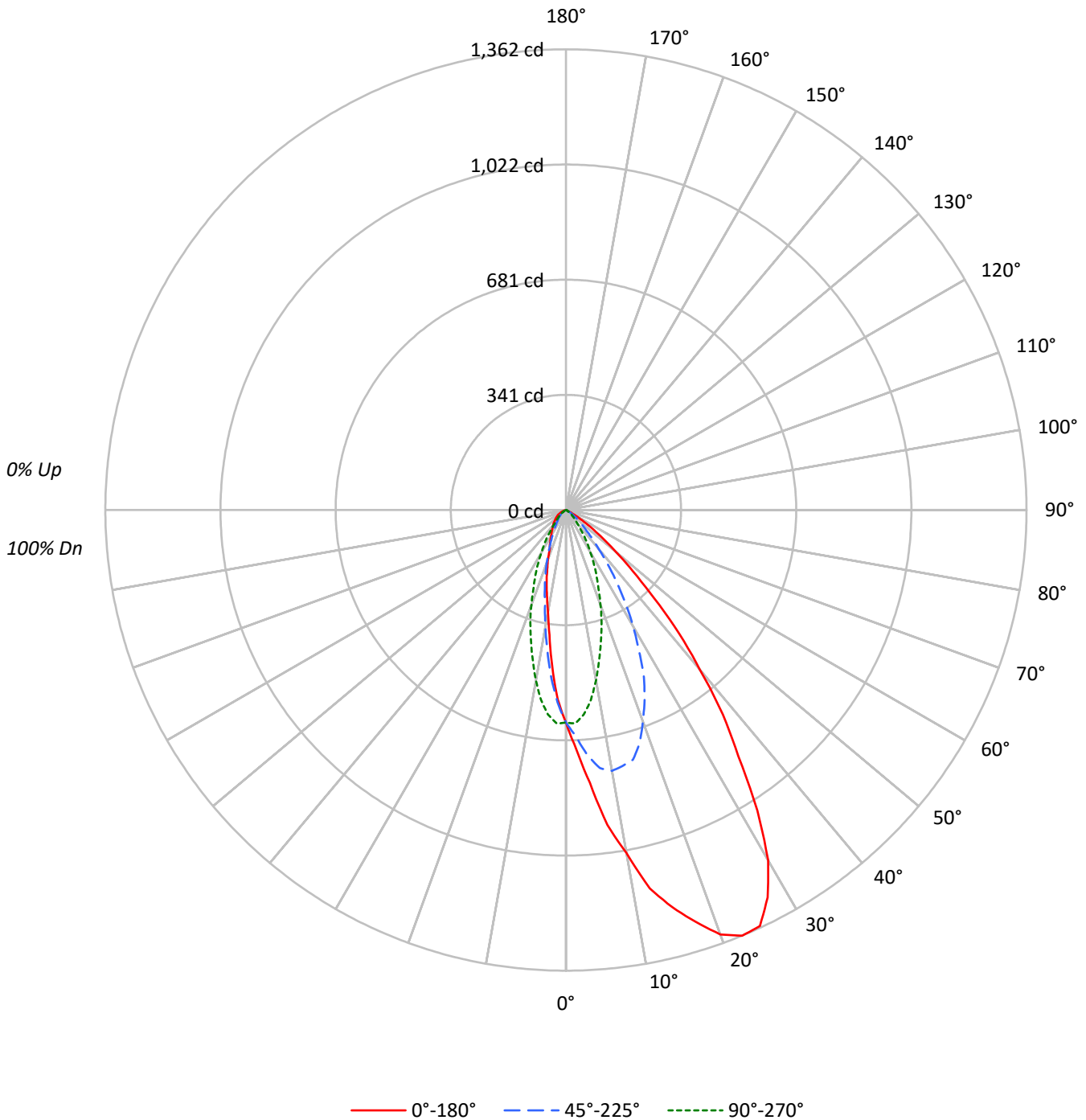
Input Watts (W): 10.3  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



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	113	110	107	105	111	108	106	103	104	102	100	100	99	97	97	96	94	93
2	107	102	97	94	105	100	96	93	97	93	91	94	91	89	91	89	87	85
3	101	94	89	84	99	93	88	84	90	86	82	87	84	81	85	82	80	78
4	95	87	81	77	93	86	80	76	84	79	75	82	78	74	80	76	73	72
5	90	81	75	70	88	80	74	70	78	73	69	76	72	68	75	71	68	66
6	85	75	69	64	83	75	68	64	73	68	64	72	67	63	70	66	63	61
7	80	70	64	59	79	70	64	59	68	63	59	67	62	59	66	62	58	57
8	76	66	60	55	75	65	59	55	64	59	55	63	58	55	62	58	54	53
9	72	62	56	51	71	61	55	51	60	55	51	60	54	51	59	54	51	49
10	69	58	52	48	68	58	52	48	57	52	48	56	51	48	55	51	48	46

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

	0°	90°	180°
0°	198458	198458	198458
5°	256398	192370	147614
10°	330063	163877	97794
15°	397483	130369	72082
20°	448735	100406	52286
25°	472790	74315	39126
30°	435823	52978	31576
35°	342382	35734	27407
40°	254411	21641	24196
45°	164245	14736	21613
50°	96185	10611	19257
55°	51033	7377	17011
60°	21472	3915	14967
65°	7696	3063	11581
70°	923	1939	6647
75°	1220	1220	0
80°	0	0	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	58.0	9.2
10°-20°	150.0	23.9
20°-30°	183.3	29.2
30°-40°	137.2	21.8
40°-50°	68.0	10.8
50°-60°	25.1	4.0
60°-70°	6.2	1.0
70°-80°	0.8	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°	391.3	62.2
0°-40°	528.5	84.1
0°-60°	621.6	98.9
0°-90°	628.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	628.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	628	628	628	628	628	
5°	809	728	607	498	466	85
15°	1216	764	399	242	220	346
25°	1357	545	213	107	112	609
35°	888	262	93	50	71	560
45°	368	86	33	28	48	293
55°	93	24	13	11	31	88
65°	10	3	4	4	16	12
75°	1	1	1	0	0	1
85°	0	0	0	0	0	0
90°	0	0	0	0	0	0

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	628.5	628.5	628.5	628.5	628.5	628.5	628.5	628.5	628.5	628.5	628.5
2.5°	707.9	707.9	716.1	702.7	702.7	698.6	668.7	651.2	631.6	602.8	568.8
5°	808.9	829.5	813.0	790.3	803.7	797.5	727.5	663.6	606.9	551.3	497.7
7.5°	938.7	943.8	929.4	900.6	894.4	890.3	769.7	664.6	565.7	482.2	420.4
10°	1029.4	1036.6	1030.4	1020.1	985.1	976.8	783.1	625.4	511.1	422.5	348.3
12.5°	1145.8	1143.7	1134.5	1104.6	1064.4	1053.1	774.9	590.4	453.4	355.5	285.4
15°	1215.9	1228.2	1214.8	1135.5	1116.9	1088.1	764.5	543.0	398.8	308.1	242.1
17.5°	1276.7	1271.5	1245.7	1195.3	1147.9	1122.1	724.4	474.0	350.3	256.6	199.9
20°	1335.4	1336.4	1296.2	1234.4	1158.2	1111.8	664.6	426.6	298.8	211.2	165.9
22.5°	1362.2	1360.1	1308.6	1216.9	1128.3	1080.9	607.9	373.0	250.4	171.0	132.9
25°	1357.0	1319.9	1285.9	1177.7	1077.8	1020.1	545.1	326.6	213.3	144.3	107.2
27.5°	1291.1	1272.5	1214.8	1106.6	991.2	932.5	466.8	279.2	178.3	113.3	87.6
30°	1195.3	1173.6	1104.6	1014.9	863.5	817.1	397.7	228.7	145.3	96.9	72.1
32.5°	1053.1	1036.6	965.5	848.0	729.5	677.0	329.7	182.4	117.5	71.1	58.7
35°	888.2	887.2	824.3	728.5	604.8	551.3	261.7	146.3	92.7	56.7	49.5
37.5°	762.5	735.7	673.9	585.3	481.2	436.9	205.0	114.4	69.0	44.3	41.2
40°	617.2	605.9	541.0	465.7	374.0	341.1	151.5	85.5	52.5	36.1	37.1
42.5°	496.6	481.2	427.6	354.5	289.5	262.7	115.4	65.9	41.2	30.9	33.0
45°	367.8	360.6	329.7	263.8	214.3	195.8	85.5	51.5	33.0	25.8	27.8
47.5°	267.9	259.7	238.0	195.8	155.6	144.3	65.9	40.2	26.8	20.6	21.6
50°	195.8	190.6	176.2	142.2	114.4	105.1	49.5	30.9	21.6	16.5	18.5
52.5°	135.0	137.0	124.7	101.0	81.4	75.2	37.1	22.7	17.5	13.4	15.5
55°	92.7	90.7	85.5	65.9	52.5	48.4	23.7	15.5	13.4	10.3	11.3
57.5°	56.7	56.7	52.5	41.2	33.0	30.9	14.4	10.3	9.3	7.2	9.3
60°	34.0	34.0	28.9	23.7	19.6	17.5	8.2	6.2	6.2	5.2	7.2
62.5°	18.5	18.5	16.5	13.4	10.3	9.3	5.2	5.2	4.1	4.1	6.2
65°	10.3	9.3	8.2	6.2	5.2	5.2	3.1	4.1	4.1	4.1	4.1
67.5°	4.1	4.1	4.1	3.1	3.1	3.1	2.1	3.1	3.1	3.1	3.1
70°	1.0	2.1	2.1	2.1	1.0	1.0	2.1	2.1	2.1	2.1	2.1
72.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
75°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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**CANDELA DISTRIBUTION (continued):**

	157.5°	180°
0°	628.5	628.5
2.5°	569.8	560.5
5°	477.1	465.7
7.5°	379.2	372.0
10°	310.1	305.0
12.5°	261.7	258.6
15°	221.5	220.5
17.5°	186.5	183.4
20°	152.5	155.6
22.5°	125.7	123.6
25°	106.1	112.3
27.5°	90.7	98.9
30°	79.3	86.6
32.5°	68.0	79.3
35°	59.8	71.1
37.5°	53.6	63.9
40°	49.5	58.7
42.5°	43.3	54.6
45°	38.1	48.4
47.5°	33.0	43.3
50°	29.9	39.2
52.5°	25.8	35.0
55°	21.6	30.9
57.5°	19.6	27.8
60°	16.5	23.7
62.5°	12.4	19.6
65°	9.3	15.5
67.5°	6.2	11.3
70°	3.1	7.2
72.5°	1.0	2.1
75°	0.0	0.0
77.5°	0.0	0.0
80°	0.0	0.0
82.5°	0.0	0.0
85°	0.0	0.0
87.5°	0.0	0.0
90°	0.0	0.0

(END OF REPORT)