

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: P601175

Luminaire Tested: **ML406AWW9FS1E - TIR4D25AWW - 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: P601175
 Test Lab: COOPER LIGHTING SOLUTIONS
 Issue Date: 7/29/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML406AWW9FS1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 5000K
 Description: RETROFIT, 25D WW OPTIC, DIFFUSE CLEAR LENS TRIM
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 5000K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 639.2 lumens
 Efficiency: N/A
 Efficacy: 77.0 lumens/watt
 Spacing Criteria (0/90/45): 1.33 / 0.62 / 0.83
 Luminous Opening: Circular (Dia: 0.21' x H: 0')
 CIE Type: Direct

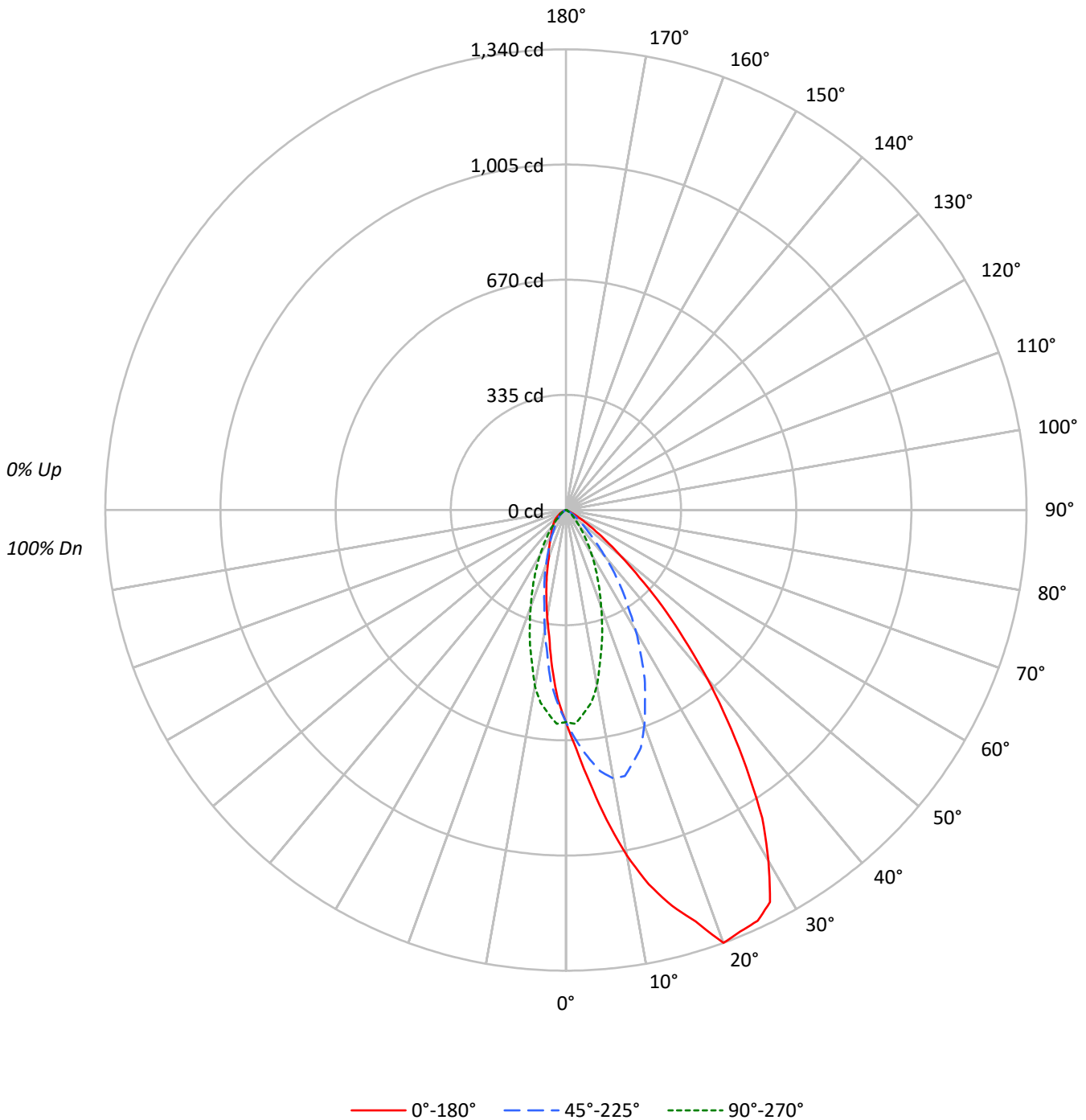
Input Watts (W): 8.3
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



Meas		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	113	110	107	105	110	108	105	103	104	102	100	100	98	97	97	95	94	92
2	107	101	97	93	104	100	96	92	96	93	90	93	91	88	91	88	86	85
3	101	94	88	84	99	92	87	83	89	85	82	87	83	80	85	82	79	78
4	95	87	81	76	93	85	80	75	83	78	75	81	77	74	79	76	73	71
5	89	80	74	69	88	79	73	69	78	72	68	76	71	68	74	70	67	65
6	84	75	68	64	83	74	68	63	72	67	63	71	66	62	70	65	62	60
7	80	70	63	59	78	69	63	58	68	62	58	66	62	58	65	61	57	56
8	76	65	59	54	74	65	59	54	64	58	54	62	57	54	61	57	53	52
9	72	61	55	51	70	61	55	50	60	54	50	59	54	50	58	53	50	48
10	68	58	51	47	67	57	51	47	56	51	47	55	50	47	55	50	47	45

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	194764	194764	194764
5°	251929	188154	145395
10°	327145	166571	100295
15°	389539	131906	71559
20°	450180	100305	48288
25°	459446	75500	39684
30°	429661	54802	31029
35°	352404	37083	27716
40°	262903	24155	24155
45°	177195	16299	21212
50°	103701	11937	18471
55°	54777	8533	14589
60°	26524	4863	11178
65°	10759	3288	7397
70°	5078	2031	4062
75°	2684	1342	0
80°	2000	2000	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	57.3	9.0
10°-20°	148.2	23.2
20°-30°	181.6	28.4
30°-40°	142.3	22.3
40°-50°	73.3	11.5
50°-60°	27.8	4.4
60°-70°	7.1	1.1
70°-80°	1.4	0.2
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°	387.1	60.6
0°-40°	529.5	82.8
0°-60°	630.6	98.7
0°-90°	639.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	639.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	617	617	617	617	617	
5°	795	720	594	503	459	83
15°	1192	758	404	242	219	340
25°	1319	542	217	113	114	599
35°	914	287	96	53	72	567
45°	397	100	36	29	48	309
55°	100	31	16	13	26	96
65°	14	6	4	4	10	18
75°	2	1	1	1	0	3
85°	0	0	0	0	0	0
90°	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°	616.8	616.8	616.8	616.8	616.8	616.8	616.8	616.8	616.8	616.8	616.8
2.5°	695.3	692.0	709.7	684.2	667.7	689.8	669.9	646.7	622.3	581.4	560.4
5°	794.8	797.0	800.3	792.6	789.3	787.0	719.6	656.6	593.6	531.7	503.0
7.5°	908.6	887.6	900.9	871.1	876.6	861.1	766.0	646.7	564.9	485.3	417.8
10°	1020.3	997.1	1008.1	980.5	973.9	960.6	792.6	620.1	519.5	412.3	354.8
12.5°	1115.3	1105.4	1094.3	1056.8	1043.5	1007.0	792.6	584.8	455.4	355.9	289.6
15°	1191.6	1181.7	1169.5	1120.9	1080.0	1047.9	758.3	535.0	403.5	305.1	242.1
17.5°	1254.6	1215.9	1217.0	1147.4	1112.0	1070.0	725.1	484.2	349.3	255.3	205.6
20°	1339.7	1269.0	1256.8	1182.8	1116.5	1070.0	666.6	428.9	298.5	215.6	169.1
22.5°	1326.5	1263.5	1277.8	1168.4	1097.7	1078.9	601.3	370.3	256.5	181.3	136.0
25°	1318.7	1273.4	1249.1	1131.9	1046.8	987.1	541.6	323.9	216.7	149.2	112.8
27.5°	1285.6	1217.0	1180.6	1062.3	968.3	919.7	470.9	274.1	181.3	118.3	95.1
30°	1178.4	1128.6	1089.9	966.1	866.6	820.2	407.9	227.7	150.3	97.3	75.2
32.5°	1062.3	1019.2	959.5	857.8	743.9	698.6	338.3	194.6	122.7	77.4	63.0
35°	914.2	878.8	822.4	719.6	610.2	590.3	287.4	155.9	96.2	61.9	53.1
37.5°	770.5	739.5	682.0	589.2	504.1	475.3	232.1	124.9	77.4	50.8	45.3
40°	637.8	601.3	563.8	473.1	403.5	372.5	178.0	97.3	58.6	40.9	38.7
42.5°	507.4	485.3	444.4	378.0	309.5	289.6	132.6	73.0	46.4	34.3	33.2
45°	396.8	373.6	334.9	290.7	233.2	217.8	99.5	56.4	36.5	27.6	28.7
47.5°	289.6	278.6	253.1	215.6	178.0	160.3	75.2	44.2	28.7	23.2	24.3
50°	211.1	200.1	187.9	153.7	123.8	119.4	56.4	34.3	24.3	18.8	19.9
52.5°	145.9	144.8	131.5	109.4	90.6	82.9	43.1	26.5	19.9	15.5	16.6
55°	99.5	98.4	89.5	76.3	64.1	58.6	31.0	19.9	15.5	12.2	13.3
57.5°	64.1	65.2	59.7	52.0	42.0	38.7	21.0	14.4	11.1	8.8	9.9
60°	42.0	42.0	36.5	33.2	26.5	24.3	14.4	9.9	7.7	6.6	7.7
62.5°	25.4	26.5	23.2	18.8	16.6	14.4	8.8	6.6	5.5	4.4	5.5
65°	14.4	15.5	13.3	11.1	9.9	8.8	5.5	4.4	4.4	3.3	4.4
67.5°	8.8	8.8	7.7	6.6	5.5	5.5	3.3	3.3	3.3	3.3	3.3
70°	5.5	5.5	4.4	4.4	3.3	3.3	2.2	3.3	2.2	2.2	2.2
72.5°	3.3	3.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	1.1	1.1
75°	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
77.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
80°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	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°	616.8	616.8
2.5°	547.2	549.4
5°	472.0	458.7
7.5°	392.4	371.4
10°	317.2	312.8
12.5°	267.5	262.0
15°	224.4	218.9
17.5°	187.9	178.0
20°	157.0	143.7
22.5°	130.4	131.5
25°	111.6	113.9
27.5°	96.2	98.4
30°	80.7	85.1
32.5°	73.0	79.6
35°	63.0	71.9
37.5°	56.4	65.2
40°	49.7	58.6
42.5°	44.2	53.1
45°	38.7	47.5
47.5°	34.3	43.1
50°	28.7	37.6
52.5°	24.3	32.1
55°	19.9	26.5
57.5°	16.6	22.1
60°	13.3	17.7
62.5°	9.9	13.3
65°	6.6	9.9
67.5°	4.4	6.6
70°	3.3	4.4
72.5°	1.1	2.2
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)