

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: P601167

Luminaire Tested: **ML406AWW9FS1E - TIR4D25AWW - TL41R_ TL42S_ 3000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P601167
 Test Lab: COOPER LIGHTING SOLUTIONS
 Issue Date: 7/29/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML406AWW9FS1E - TIR4D25AWW - TL41R_ TL42S_ 3000K
 Description: RETROFIT, 25D WW OPTIC, OPEN TRIM
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 3000K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 498.2 lumens
 Efficiency: N/A
 Efficacy: 60.0 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

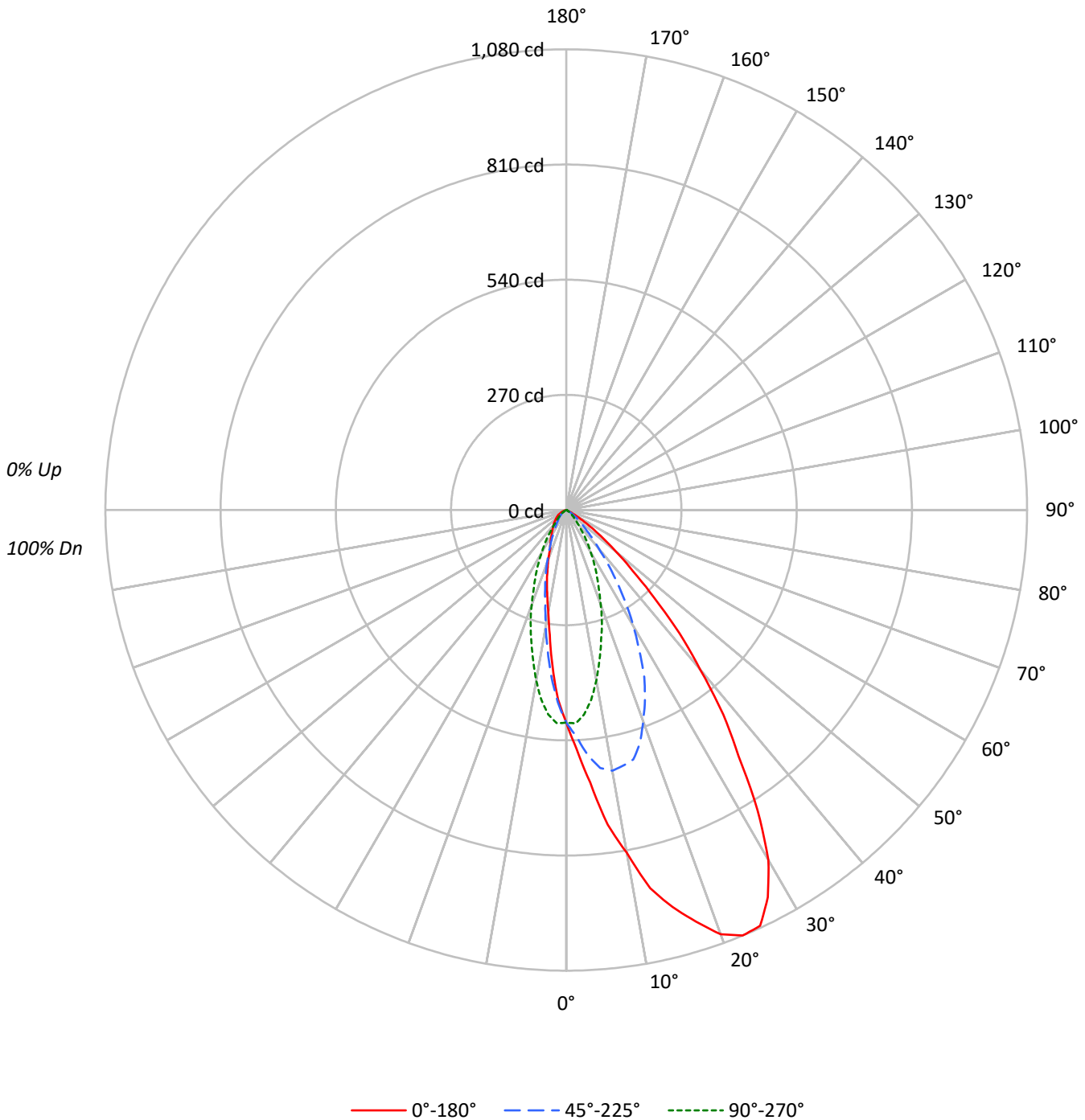
Input Watts (W): 8.3
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



Meas			
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	50	30	10	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	100	100	93	
1	113	110	107	105	111	108	106	103	104	102	100	100	99	97	97	96	94	97	97	97	93	
2	107	102	97	94	105	100	96	93	97	93	91	94	91	89	91	89	87	91	91	91	85	
3	101	94	89	84	99	93	88	84	90	86	82	87	84	81	85	82	80	85	85	85	78	
4	95	87	81	77	93	86	80	76	84	79	75	82	78	74	80	76	73	80	80	80	72	
5	90	81	75	70	88	80	74	70	78	73	69	76	72	68	75	71	68	75	75	75	66	
6	85	75	69	64	83	75	68	64	73	68	64	72	67	63	70	66	63	70	70	70	61	
7	80	70	64	59	79	70	64	59	68	63	59	67	62	59	66	62	58	66	66	66	57	
8	76	66	60	55	75	65	59	55	64	59	55	63	58	55	62	58	54	62	62	62	53	
9	72	62	56	51	71	61	55	51	60	55	51	60	54	51	59	54	51	59	59	59	49	
10	69	58	52	48	68	58	52	48	57	52	48	56	51	48	55	51	48	55	55	55	46	

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	157314	157314	157314
5°	203210	152463	116994
10°	261575	129890	77498
15°	315005	103302	57143
20°	355654	79572	41433
25°	374713	58881	31008
30°	345399	41967	25013
35°	271338	28333	21702
40°	201649	17148	19167
45°	130172	11655	17148
50°	76241	8400	15229
55°	40463	5836	13488
60°	16988	3094	11873
65°	6127	2466	9115
70°	739	1477	5262
75°	976	976	0
80°	0	0	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	45.9	9.2
10°-20°	118.9	23.9
20°-30°	145.3	29.2
30°-40°	108.7	21.8
40°-50°	53.9	10.8
50°-60°	19.9	4.0
60°-70°	4.9	1.0
70°-80°	0.7	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°	310.1	62.2
0°-40°	418.8	84.1
0°-60°	492.6	98.9
0°-90°	498.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	498.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	498	498	498	498	498	
5°	641	576	481	394	369	67
15°	964	606	316	192	175	274
25°	1076	432	169	85	89	482
35°	704	207	74	39	56	444
45°	292	68	26	22	38	232
55°	74	19	11	9	24	70
65°	8	2	3	3	12	10
75°	1	1	1	0	0	1
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°	498.2	498.2	498.2	498.2	498.2	498.2	498.2	498.2	498.2	498.2	498.2
2.5°	561.0	561.0	567.6	556.9	556.9	553.7	530.0	516.1	500.6	477.7	450.8
5°	641.1	657.4	644.3	626.4	637.0	632.1	576.5	525.9	481.0	436.9	394.4
7.5°	744.0	748.0	736.6	713.7	708.8	705.6	610.0	526.7	448.3	382.2	333.2
10°	815.8	821.5	816.6	808.5	780.7	774.2	620.6	495.7	405.1	334.8	276.0
12.5°	908.1	906.5	899.1	875.4	843.6	834.6	614.1	467.9	359.3	281.7	226.2
15°	963.6	973.4	962.8	899.9	885.2	862.4	605.9	430.4	316.0	244.2	191.9
17.5°	1011.8	1007.7	987.3	947.3	909.7	889.3	574.1	375.7	277.7	203.3	158.4
20°	1058.4	1059.2	1027.3	978.3	917.9	881.2	526.7	338.1	236.8	167.4	131.5
22.5°	1079.6	1078.0	1037.1	964.5	894.2	856.7	481.8	295.6	198.4	135.6	105.3
25°	1075.5	1046.1	1019.2	933.4	854.2	808.5	432.0	258.9	169.0	114.3	84.9
27.5°	1023.2	1008.6	962.8	877.1	785.6	739.1	369.9	221.3	141.3	89.8	69.4
30°	947.3	930.2	875.4	804.4	684.3	647.6	315.2	181.3	115.1	76.8	57.2
32.5°	834.6	821.5	765.2	672.1	578.2	536.5	261.3	144.5	93.1	56.3	46.5
35°	703.9	703.1	653.3	577.4	479.4	436.9	207.4	116.0	73.5	44.9	39.2
37.5°	604.3	583.1	534.1	463.9	381.4	346.3	162.5	90.6	54.7	35.1	32.7
40°	489.2	480.2	428.7	369.1	296.4	270.3	120.0	67.8	41.6	28.6	29.4
42.5°	393.6	381.4	338.9	280.9	229.5	208.2	91.5	52.3	32.7	24.5	26.1
45°	291.5	285.8	261.3	209.1	169.9	155.2	67.8	40.8	26.1	20.4	22.0
47.5°	212.3	205.8	188.6	155.2	123.3	114.3	52.3	31.8	21.2	16.3	17.1
50°	155.2	151.1	139.6	112.7	90.6	83.3	39.2	24.5	17.1	13.1	14.7
52.5°	107.0	108.6	98.8	80.0	64.5	59.6	29.4	18.0	13.9	10.6	12.2
55°	73.5	71.9	67.8	52.3	41.6	38.4	18.8	12.2	10.6	8.2	9.0
57.5°	44.9	44.9	41.6	32.7	26.1	24.5	11.4	8.2	7.3	5.7	7.3
60°	26.9	26.9	22.9	18.8	15.5	13.9	6.5	4.9	4.9	4.1	5.7
62.5°	14.7	14.7	13.1	10.6	8.2	7.3	4.1	4.1	3.3	3.3	4.9
65°	8.2	7.3	6.5	4.9	4.1	4.1	2.4	3.3	3.3	3.3	3.3
67.5°	3.3	3.3	3.3	2.4	2.4	2.4	1.6	2.4	2.4	2.4	2.4
70°	0.8	1.6	1.6	1.6	0.8	0.8	1.6	1.6	1.6	1.6	1.6
72.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
75°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	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°	498.2	498.2
2.5°	451.6	444.3
5°	378.1	369.1
7.5°	300.5	294.8
10°	245.8	241.7
12.5°	207.4	205.0
15°	175.6	174.8
17.5°	147.8	145.4
20°	120.9	123.3
22.5°	99.6	98.0
25°	84.1	89.0
27.5°	71.9	78.4
30°	62.9	68.6
32.5°	53.9	62.9
35°	47.4	56.3
37.5°	42.5	50.6
40°	39.2	46.5
42.5°	34.3	43.3
45°	30.2	38.4
47.5°	26.1	34.3
50°	23.7	31.0
52.5°	20.4	27.8
55°	17.1	24.5
57.5°	15.5	22.0
60°	13.1	18.8
62.5°	9.8	15.5
65°	7.3	12.2
67.5°	4.9	9.0
70°	2.4	5.7
72.5°	0.8	1.6
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)