

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: P601172

Luminaire Tested: **ML406AWW9FS1E - TIR4D25AWW - TL43R2G_ TL44S2G_ 3000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P601172
 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_ 3000K
 Description: RETROFIT, 25D WW OPTIC, DIFFUSE CLEAR LENS TRIM
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 3000K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 580.4 lumens
 Efficiency: N/A
 Efficacy: 69.9 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

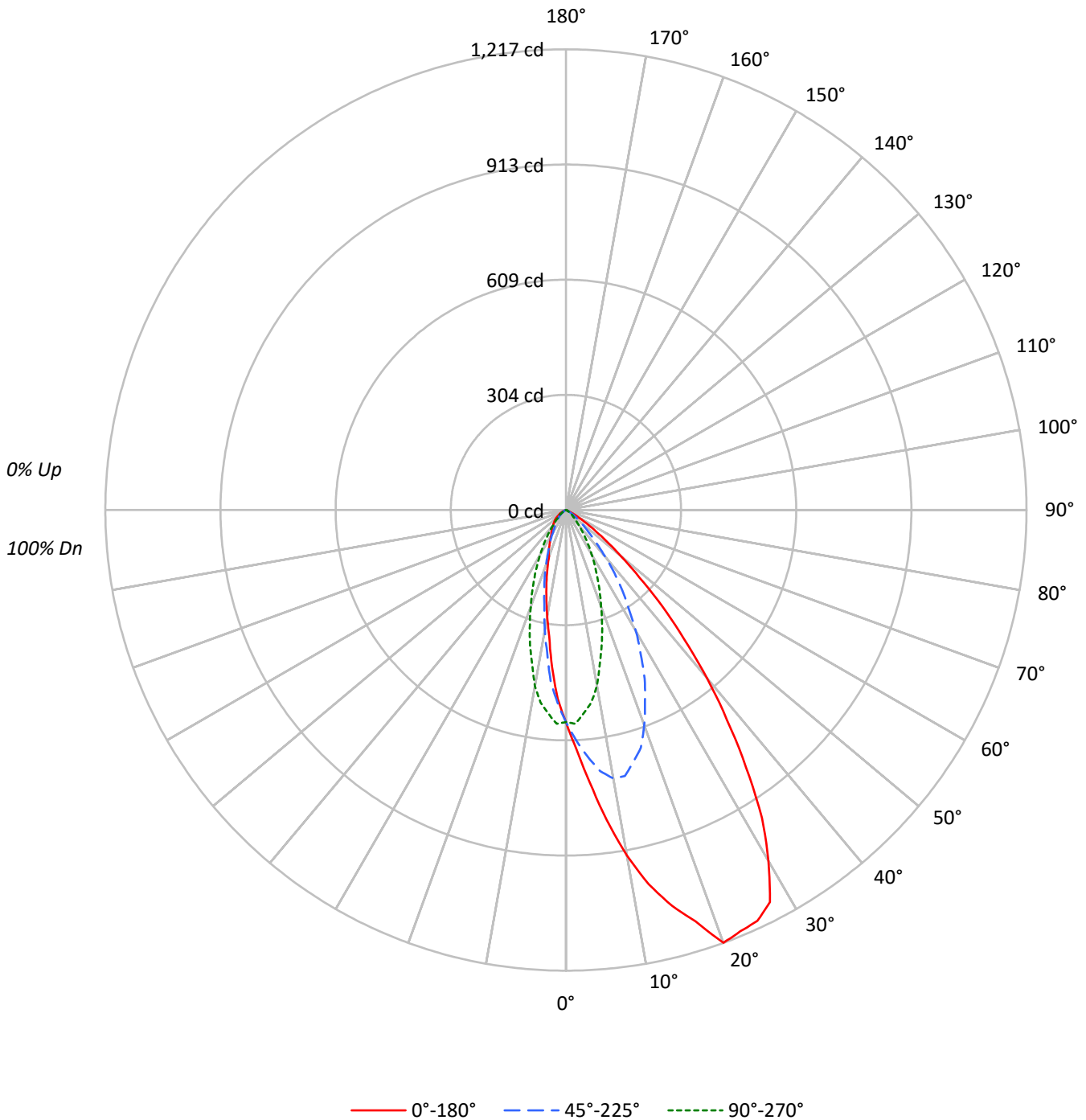
Input Watts (W): 8.3
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



Meas			
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	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°	176860	176860	176860
5°	228758	170848	132050
10°	297070	151276	91093
15°	353743	119778	64956
20°	408814	91064	43852
25°	417219	68532	36025
30°	390137	49770	28185
35°	319985	33652	25133
40°	238747	21929	21929
45°	160940	14781	19291
50°	94171	10856	16751
55°	49712	7762	13268
60°	24061	4421	10168
65°	9713	2989	6724
70°	4616	1846	3693
75°	2440	1220	0
80°	1818	1818	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	52.0	9.0
10°-20°	134.6	23.2
20°-30°	164.9	28.4
30°-40°	129.2	22.3
40°-50°	66.6	11.5
50°-60°	25.3	4.4
60°-70°	6.4	1.1
70°-80°	1.3	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°	351.5	60.6
0°-40°	480.8	82.8
0°-60°	572.6	98.7
0°-90°	580.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	580.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	560	560	560	560	560	
5°	722	654	539	457	417	75
15°	1082	689	366	220	199	309
25°	1198	492	197	102	103	544
35°	830	261	87	48	65	515
45°	360	90	33	26	43	280
55°	90	28	14	12	24	87
65°	13	5	4	4	9	16
75°	2	1	1	1	0	2
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°	560.1	560.1	560.1	560.1	560.1	560.1	560.1	560.1	560.1	560.1	560.1
2.5°	631.4	628.4	644.4	621.3	606.3	626.4	608.3	587.2	565.1	528.0	508.9
5°	721.7	723.7	726.7	719.7	716.7	714.7	653.5	596.2	539.0	482.8	456.7
7.5°	825.1	806.0	818.1	791.0	796.0	781.9	695.6	587.2	512.9	440.7	379.4
10°	926.5	905.4	915.4	890.3	884.3	872.3	719.7	563.1	471.8	374.4	322.2
12.5°	1012.8	1003.8	993.7	959.6	947.6	914.4	719.7	531.0	413.6	323.2	263.0
15°	1082.1	1073.0	1062.0	1017.8	980.7	951.6	688.6	485.8	366.4	277.0	219.8
17.5°	1139.3	1104.1	1105.1	1041.9	1009.8	971.6	658.5	439.7	317.2	231.9	186.7
20°	1216.6	1152.3	1141.3	1074.0	1013.8	971.6	605.3	389.5	271.0	195.7	153.6
22.5°	1204.5	1147.3	1160.4	1061.0	996.7	979.7	546.1	336.3	232.9	164.6	123.5
25°	1197.5	1156.3	1134.3	1027.9	950.6	896.4	491.8	294.1	196.7	135.5	102.4
27.5°	1167.4	1105.1	1072.0	964.6	879.3	835.1	427.6	248.9	164.6	107.4	86.3
30°	1070.0	1024.8	989.7	877.3	787.0	744.8	370.4	206.8	136.5	88.3	68.3
32.5°	964.6	925.5	871.3	778.9	675.5	634.4	307.2	176.7	111.4	70.3	57.2
35°	830.1	798.0	746.8	653.5	554.1	536.0	261.0	141.5	87.3	56.2	48.2
37.5°	699.6	671.5	619.3	535.0	457.7	431.6	210.8	113.4	70.3	46.2	41.2
40°	579.2	546.1	511.9	429.6	366.4	338.3	161.6	88.3	53.2	37.1	35.1
42.5°	460.7	440.7	403.5	343.3	281.1	263.0	120.5	66.2	42.2	31.1	30.1
45°	360.4	339.3	304.1	264.0	211.8	197.7	90.3	51.2	33.1	25.1	26.1
47.5°	263.0	252.9	229.9	195.7	161.6	145.5	68.3	40.2	26.1	21.1	22.1
50°	191.7	181.7	170.6	139.5	112.4	108.4	51.2	31.1	22.1	17.1	18.1
52.5°	132.5	131.5	119.4	99.4	82.3	75.3	39.1	24.1	18.1	14.1	15.1
55°	90.3	89.3	81.3	69.3	58.2	53.2	28.1	18.1	14.1	11.0	12.0
57.5°	58.2	59.2	54.2	47.2	38.1	35.1	19.1	13.0	10.0	8.0	9.0
60°	38.1	38.1	33.1	30.1	24.1	22.1	13.0	9.0	7.0	6.0	7.0
62.5°	23.1	24.1	21.1	17.1	15.1	13.0	8.0	6.0	5.0	4.0	5.0
65°	13.0	14.1	12.0	10.0	9.0	8.0	5.0	4.0	4.0	3.0	4.0
67.5°	8.0	8.0	7.0	6.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0
70°	5.0	5.0	4.0	4.0	3.0	3.0	2.0	3.0	2.0	2.0	2.0
72.5°	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0
75°	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
77.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
80°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	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°	560.1	560.1
2.5°	496.9	498.9
5°	428.6	416.6
7.5°	356.3	337.3
10°	288.1	284.1
12.5°	242.9	237.9
15°	203.8	198.7
17.5°	170.6	161.6
20°	142.5	130.5
22.5°	118.4	119.4
25°	101.4	103.4
27.5°	87.3	89.3
30°	73.3	77.3
32.5°	66.2	72.3
35°	57.2	65.2
37.5°	51.2	59.2
40°	45.2	53.2
42.5°	40.2	48.2
45°	35.1	43.2
47.5°	31.1	39.1
50°	26.1	34.1
52.5°	22.1	29.1
55°	18.1	24.1
57.5°	15.1	20.1
60°	12.0	16.1
62.5°	9.0	12.0
65°	6.0	9.0
67.5°	4.0	6.0
70°	3.0	4.0
72.5°	1.0	2.0
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)