

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: P601233

Luminaire Tested: **ML408LSAWW95FS1E - TIR4D25AWW - TL41R_ TL42S_ 5000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P601233
 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_ 5000K
 Description: RETROFIT, 25D WW OPTIC, OPEN TRIM
 Light Source: (1) SELECTABLE LUMEN LED 95CRI / 5000K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 653.9 lumens
 Efficiency: N/A
 Efficacy: 63.5 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

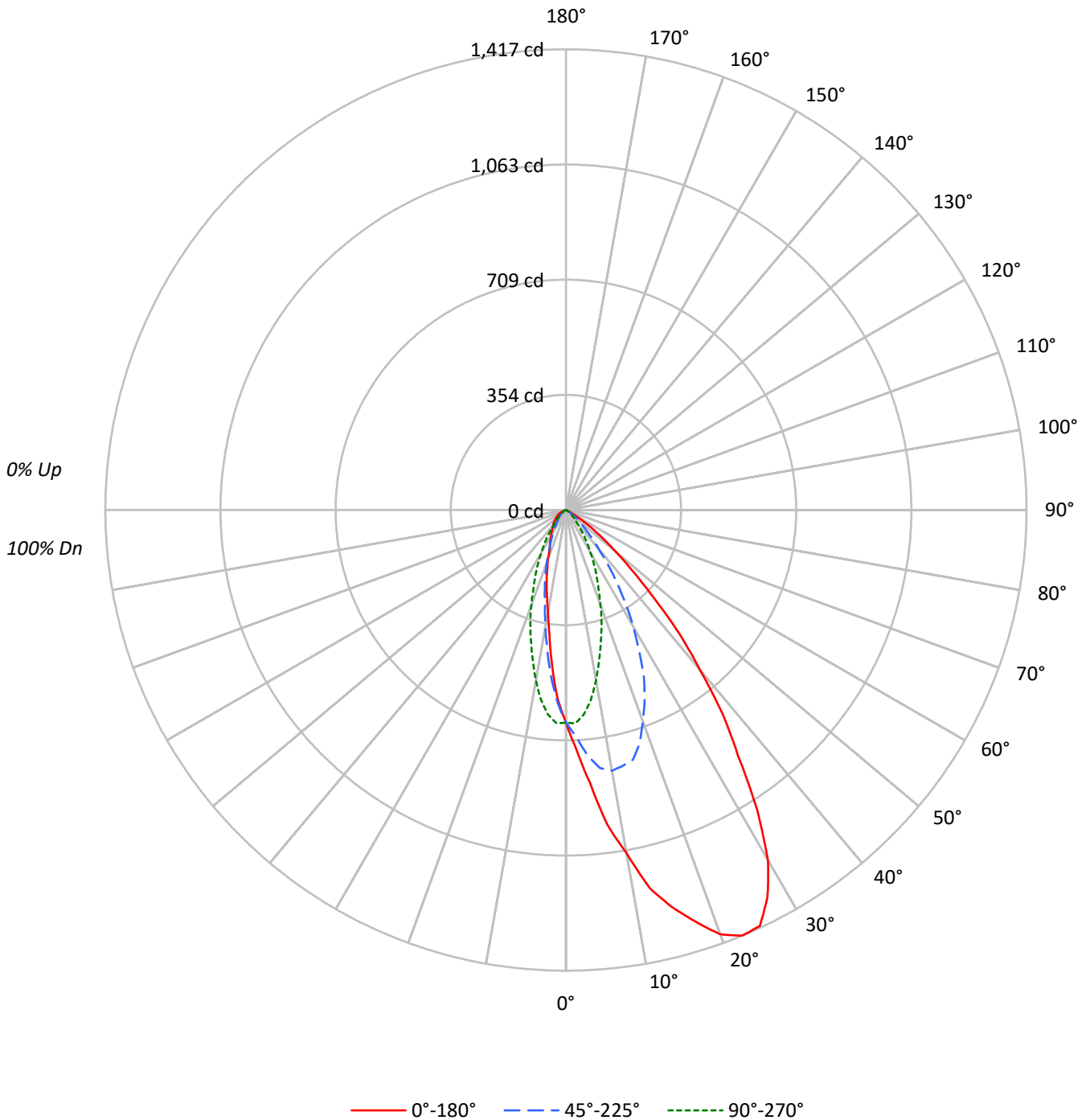
Input Watts (W): 10.3
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



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

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	206447	206447	206447
5°	266668	200104	153541
10°	343305	170450	101706
15°	413436	135600	74992
20°	466746	104438	54370
25°	491778	77312	40694
30°	453288	55093	32815
35°	356105	37199	28525
40°	264634	22547	25186
45°	170854	15317	22507
50°	100017	11053	19994
55°	53125	7652	17727
60°	22356	4042	15599
65°	7995	3213	12029
70°	1016	1939	6924
75°	1342	1342	0
80°	0	0	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	60.3	9.2
10°-20°	156.0	23.9
20°-30°	190.7	29.2
30°-40°	142.7	21.8
40°-50°	70.7	10.8
50°-60°	26.1	4.0
60°-70°	6.5	1.0
70°-80°	0.9	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°	407.0	62.2
0°-40°	549.7	84.1
0°-60°	646.5	98.9
0°-90°	653.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	653.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	654	654	654	654	654	
5°	841	757	631	518	484	88
15°	1265	795	415	252	229	360
25°	1412	567	222	112	117	633
35°	924	272	96	51	74	582
45°	383	89	34	29	50	305
55°	96	25	14	12	32	92
65°	11	3	4	4	16	13
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°	653.8	653.8	653.8	653.8	653.8	653.8	653.8	653.8	653.8	653.8	653.8
2.5°	736.3	736.3	744.9	730.9	730.9	726.6	695.6	677.3	657.0	627.0	591.6
5°	841.3	862.8	845.6	822.0	836.0	829.5	756.7	690.2	631.3	573.4	517.7
7.5°	976.4	981.7	966.7	936.7	930.3	926.0	800.6	691.3	588.4	501.6	437.3
10°	1070.7	1078.2	1071.8	1061.0	1024.6	1016.0	814.5	650.6	531.6	439.4	362.3
12.5°	1191.8	1189.6	1180.0	1148.9	1107.1	1095.3	806.0	614.1	471.6	369.8	296.9
15°	1264.7	1277.5	1263.6	1181.1	1161.8	1131.8	795.2	564.8	414.8	320.5	251.9
17.5°	1327.9	1322.5	1295.7	1243.2	1193.9	1167.1	753.4	493.0	364.4	266.9	207.9
20°	1389.0	1390.1	1348.3	1284.0	1204.6	1156.4	691.3	443.7	310.8	219.7	172.6
22.5°	1416.9	1414.7	1361.1	1265.7	1173.6	1124.3	632.3	388.0	260.4	177.9	138.3
25°	1411.5	1372.9	1337.5	1225.0	1121.1	1061.0	567.0	339.7	221.9	150.0	111.5
27.5°	1342.9	1323.6	1263.6	1151.1	1031.0	969.9	485.5	290.4	185.4	117.9	91.1
30°	1243.2	1220.7	1148.9	1055.7	898.1	849.9	413.7	237.9	151.1	100.7	75.0
32.5°	1095.3	1078.2	1004.2	882.1	758.8	704.1	343.0	189.7	122.2	74.0	61.1
35°	923.8	922.8	857.4	757.7	629.1	573.4	272.2	152.2	96.5	58.9	51.4
37.5°	793.1	765.2	700.9	608.8	500.5	454.4	213.3	119.0	71.8	46.1	42.9
40°	642.0	630.2	562.7	484.4	389.0	354.7	157.5	89.0	54.7	37.5	38.6
42.5°	516.6	500.5	444.8	368.7	301.2	273.3	120.0	68.6	42.9	32.2	34.3
45°	382.6	375.1	343.0	274.4	222.9	203.6	89.0	53.6	34.3	26.8	28.9
47.5°	278.7	270.1	247.6	203.6	161.8	150.0	68.6	41.8	27.9	21.4	22.5
50°	203.6	198.3	183.3	147.9	119.0	109.3	51.4	32.2	22.5	17.1	19.3
52.5°	140.4	142.5	129.7	105.0	84.7	78.2	38.6	23.6	18.2	13.9	16.1
55°	96.5	94.3	89.0	68.6	54.7	50.4	24.7	16.1	13.9	10.7	11.8
57.5°	58.9	58.9	54.7	42.9	34.3	32.2	15.0	10.7	9.6	7.5	9.6
60°	35.4	35.4	30.0	24.7	20.4	18.2	8.6	6.4	6.4	5.4	7.5
62.5°	19.3	19.3	17.1	13.9	10.7	9.6	5.4	5.4	4.3	4.3	6.4
65°	10.7	9.6	8.6	6.4	5.4	5.4	3.2	4.3	4.3	4.3	4.3
67.5°	4.3	4.3	4.3	3.2	3.2	3.2	2.1	3.2	3.2	3.2	3.2
70°	1.1	2.1	2.1	2.1	1.1	1.1	2.1	2.1	2.1	2.1	2.1
72.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
75°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	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°	653.8	653.8
2.5°	592.7	583.0
5°	496.2	484.4
7.5°	394.4	386.9
10°	322.6	317.2
12.5°	272.2	269.0
15°	230.4	229.4
17.5°	194.0	190.8
20°	158.6	161.8
22.5°	130.8	128.6
25°	110.4	116.8
27.5°	94.3	102.9
30°	82.5	90.0
32.5°	70.7	82.5
35°	62.2	74.0
37.5°	55.7	66.4
40°	51.4	61.1
42.5°	45.0	56.8
45°	39.7	50.4
47.5°	34.3	45.0
50°	31.1	40.7
52.5°	26.8	36.4
55°	22.5	32.2
57.5°	20.4	28.9
60°	17.1	24.7
62.5°	12.9	20.4
65°	9.6	16.1
67.5°	6.4	11.8
70°	3.2	7.5
72.5°	1.1	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)