

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO

Report Number: P275378

Luminaire Tested: **ML4D09_935 - TIR50AWW25 - TL45R6GMWWB - TL46S6GMWWB**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P275378
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1808-901-18)
Test Lab: INNOVATION CENTER(G3)
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: ML4D09_935 - TIR50AWW25 - TL45R6GMWWB - TL46S6GMWWB
Description: ML4 900LM 2700K, 90CRI, 25° ASYMM WW, WITH ROUND ASYMM WW, LINEAR SPREAD LENS, MATTE WHITE FLANGE, WHITE LENS FRAME
Light Source: (1) HIGH LUMEN LED 90CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 719.0 lumens
Efficiency: N/A
Efficacy: 63.6 lumens/watt
Spacing Criteria (0/90/45): 1.33 / 0.78 / 1.1
Luminous Opening: Circular (Dia: 0.17' x H: 0')
CIE Type: Direct

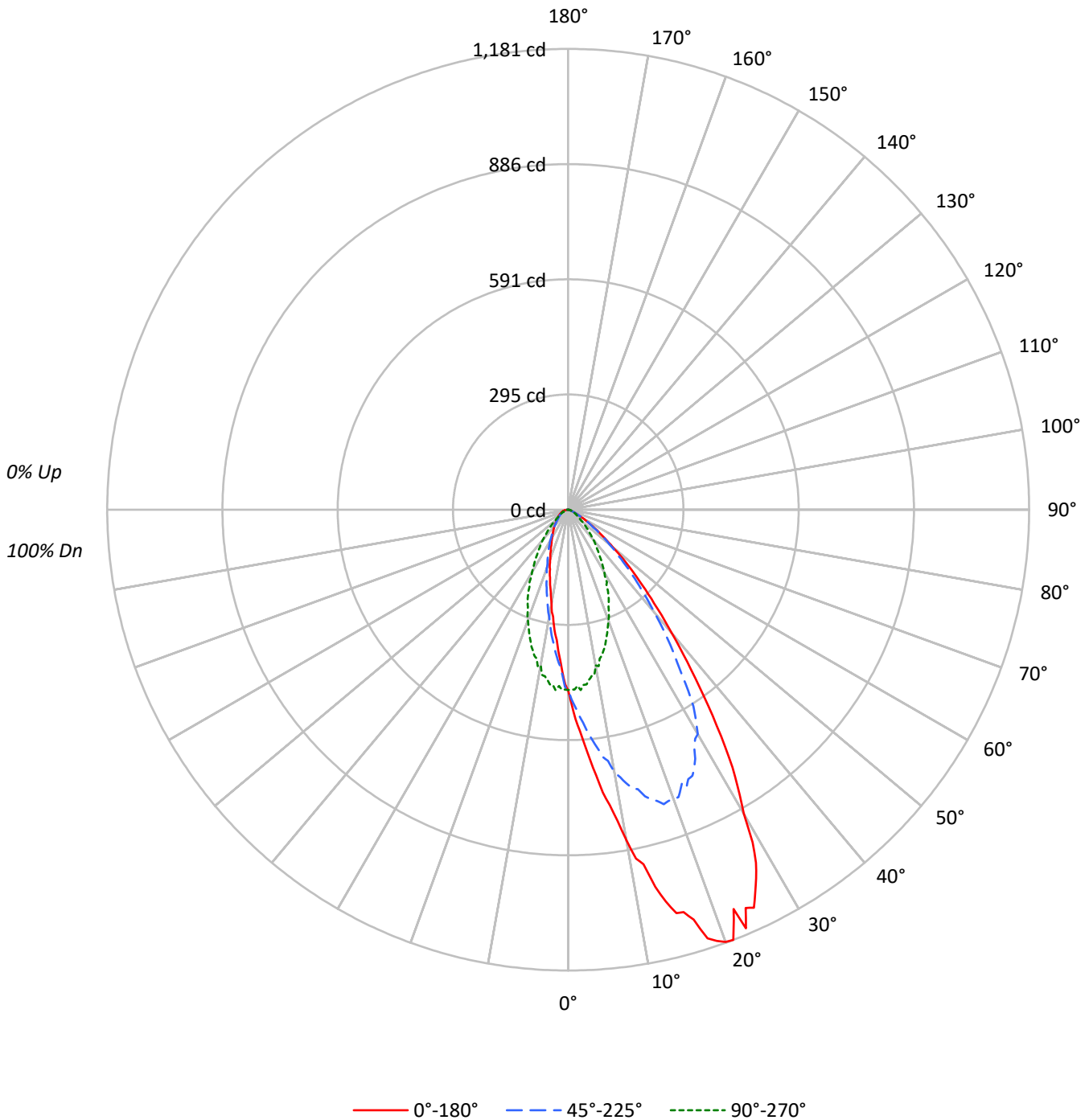
Input Watts (W): 11.3
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P275378

CATALOG NUMBER: ML4D09_935 - TIR50AWW25 - TL45R6GMWWB - TL46S6GMWWB

Luminous Intensity Polar Plot





TEST NUMBER: P275378

CATALOG NUMBER: ML4D09_935 - TIR50AWW25 - TL45R6GMWWB - TL46S6GMWWB

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	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			
1	112	109	106	103	110	107	104	102	103	100	98	99	97	95	95	94	93	91					91			
2	105	99	94	90	103	98	93	89	94	91	87	91	88	85	88	86	84	82					82			
3	99	91	85	80	96	89	84	79	87	82	78	84	80	77	82	78	76	74					74			
4	92	83	77	72	90	82	76	71	80	75	70	78	73	69	76	72	69	67					67			
5	87	77	70	65	85	76	69	64	74	68	64	72	67	63	70	66	63	61					61			
6	81	71	64	59	80	70	63	59	68	62	58	67	62	58	65	61	57	56					56			
7	77	66	59	54	75	65	58	53	64	58	53	62	57	53	61	56	53	51					51			
8	72	61	54	49	71	60	54	49	59	53	49	58	53	49	57	52	48	47					47			
9	68	57	50	45	67	56	50	45	55	49	45	54	49	45	53	48	45	43					43			
10	64	53	47	42	63	53	46	42	52	46	42	51	46	42	50	45	42	40					40			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	228040	228040	228040
5°	319000	223364	165864
10°	431203	203001	123043
15°	546845	185874	91788
20°	618921	158248	70356
25°	612595	133102	56507
30°	512621	105566	47058
35°	388607	82697	40354
40°	265289	64728	35230
45°	179948	48284	30352
50°	113983	34310	27402
55°	72943	25891	25891
60°	41839	22005	24274
65°	20897	18212	24750
70°	11252	16157	24091
75°	6291	12772	23447
80°	6251	12786	25287
85°	6227	12454	25474



TEST NUMBER: P275378

CATALOG NUMBER: ML4D09_935 - TIR50AWW25 - TL45R6GMWWB - TL46S6GMWWB

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	45.3	6.3
10°-20°	138.4	19.2
20°-30°	197.0	27.4
30°-40°	167.6	23.3
40°-50°	96.0	13.4
50°-60°	44.6	6.2
60°-70°	18.9	2.6
70°-80°	8.3	1.2
80°-90°	2.8	0.4
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°	380.7	53.0
0°-40°	548.3	76.3
0°-60°	688.9	95.8
0°-90°	719.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	719.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	462	462	462	462	462	
5°	644	573	451	368	335	68
15°	1071	760	364	212	180	301
25°	1125	752	244	119	104	501
35°	645	497	137	69	67	402
45°	258	223	69	41	44	204
55°	85	78	30	27	30	78
65°	18	19	16	18	21	20
75°	3	4	7	11	12	4
85°	1	1	2	3	4	1
90°	0	0	0	0	0	



TEST NUMBER: P275378

CATALOG NUMBER: ML4D09_935 - TIR50AWW25 - TL45R6GMWWB - TL46S6GMWWB

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	462.2	462.2	462.2	462.2	462.2	462.2	462.2	462.2	462.2	462.2	462.2
1°	499.0	503.5	487.8	490.1	487.8	487.8	485.6	484.5	481.1	481.1	485.6
2°	537.0	526.9	521.3	504.6	516.9	519.1	511.3	511.3	509.0	494.5	504.6
3°	568.2	569.3	555.9	554.8	541.4	545.9	547.0	544.8	539.2	524.7	526.9
4°	602.8	600.6	592.8	590.5	586.1	586.1	577.1	578.3	568.2	554.8	547.0
5°	644.1	645.2	630.7	621.8	609.5	611.8	608.4	612.9	591.7	579.4	572.7
6°	684.3	685.4	670.9	664.2	651.9	648.6	644.1	641.9	618.4	601.7	593.9
7°	730.1	724.5	711.1	701.1	692.1	684.3	678.7	677.6	649.7	633.0	615.1
8°	764.7	770.3	764.7	734.5	729.0	733.4	713.3	701.1	678.7	657.5	639.7
9°	807.1	814.9	795.9	799.3	765.8	763.6	754.6	733.4	725.6	675.4	651.9
10°	860.7	855.1	837.3	820.5	812.7	806.0	782.5	778.1	745.7	687.7	682.1
11°	910.9	897.5	881.9	876.3	846.2	840.6	804.9	801.5	765.8	724.5	698.8
12°	928.8	950.0	913.2	903.1	885.3	878.6	854.0	828.3	789.2	742.4	716.7
13°	992.4	989.1	977.9	965.6	916.5	910.9	888.6	859.6	817.2	768.0	733.4
14°	1034.8	1036.0	1013.6	990.2	953.3	944.4	919.9	892.0	840.6	784.8	737.9
15°	1070.6	1079.5	1040.4	1021.4	986.8	975.7	947.8	921.0	865.2	803.8	760.2
16°	1072.8	1096.2	1069.4	1050.5	1011.4	1004.7	975.7	940.0	880.8	817.2	772.5
17°	1098.5	1129.7	1089.5	1095.1	1036.0	1023.7	994.7	952.2	909.8	837.3	780.3
18°	1155.4	1146.5	1124.1	1099.6	1057.2	1043.8	1020.3	975.7	910.9	823.9	793.7
19°	1168.8	1166.6	1153.2	1116.3	1071.7	1057.2	1027.0	980.1	918.7	851.8	789.2
20°	1178.8	1175.5	1154.3	1125.3	1072.8	1061.6	1034.8	993.5	929.9	855.1	789.2
21°	1181.1	1198.9	1153.2	1115.2	1081.7	1068.3	1037.1	994.7	924.3	854.0	789.2
22.5°	1107.4	1175.5	1159.9	1094.0	1088.4	1069.4	1040.4	982.4	917.6	840.6	760.2
23°	1165.5	1172.2	1148.7	1119.7	1071.7	1057.2	1024.8	977.9	923.2	842.8	774.7
24°	1117.5	1152.1	1117.5	1102.9	1057.2	1053.8	1006.9	971.2	910.9	830.6	755.8
25°	1125.3	1127.5	1098.5	1081.7	1038.2	1031.5	1013.6	950.0	887.5	817.2	752.4
26°	1092.9	1101.8	1073.9	1057.2	1031.5	998.0	983.5	928.8	869.6	793.7	736.8
27°	1060.5	1062.7	1036.0	1022.6	1003.6	970.1	945.5	904.2	857.3	769.2	716.7
28°	1024.8	1024.8	1000.2	983.5	947.8	936.6	923.2	875.2	819.4	752.4	687.7
29°	974.6	976.8	956.7	948.9	912.0	897.5	878.6	840.6	798.2	724.5	670.9
30°	899.8	931.0	908.7	896.4	869.6	860.7	854.0	825.0	769.2	702.2	664.2
32.5°	783.7	797.1	783.7	773.6	772.5	745.7	725.6	705.5	676.5	624.0	597.2
35°	645.2	659.8	641.9	650.8	635.2	630.7	622.9	596.1	579.4	535.8	496.8
37.5°	515.7	528.0	524.7	522.4	505.7	505.7	505.7	489.0	473.3	445.4	419.7
40°	411.9	419.7	422.0	419.7	415.3	416.4	397.4	398.5	380.7	365.0	342.7
42.5°	326.0	332.7	330.4	323.7	326.0	320.4	331.6	318.2	315.9	293.6	278.0
45°	257.9	256.8	261.2	259.0	257.9	255.6	253.4	253.4	245.6	235.5	223.3
47.5°	202.1	202.1	202.1	203.2	200.9	199.8	199.8	197.6	195.4	183.1	175.3
50°	148.5	154.1	151.8	151.8	157.4	155.2	152.9	155.2	154.1	144.0	138.4
52.5°	111.6	112.7	115.0	112.7	117.2	115.0	116.1	117.2	113.9	110.5	107.2
55°	84.8	82.6	84.8	84.8	88.2	87.1	86.0	86.0	86.0	81.5	78.1
57.5°	60.3	60.3	62.5	61.4	62.5	61.4	62.5	64.7	62.5	60.3	59.2
60°	42.4	42.4	43.5	44.7	45.8	45.8	45.8	45.8	44.7	43.5	42.4
62.5°	29.0	29.0	29.0	30.1	31.3	30.1	32.4	31.3	31.3	31.3	29.0
65°	17.9	17.9	19.0	19.0	20.1	20.1	20.1	21.2	21.2	20.1	19.0



TEST NUMBER: P275378

CATALOG NUMBER: ML4D09_935 - TIR50AWW25 - TL45R6GMWWB - TL46S6GMWWB

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
67.5°	11.2	11.2	11.2	12.3	13.4	12.3	13.4	13.4	13.4	12.3	13.4
70°	7.8	6.7	7.8	7.8	7.8	7.8	7.8	7.8	8.9	8.9	8.9
72.5°	4.5	4.5	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
75°	3.3	3.3	3.3	3.3	4.5	4.5	4.5	4.5	4.5	4.5	4.5
77.5°	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
80°	2.2	2.2	2.2	2.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3
82.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
85°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P275378

CATALOG NUMBER: ML4D09_935 - TIR50AWW25 - TL45R6GMWWB - TL46S6GMWWB

CANDELA DISTRIBUTION (continued):

	67.5°	90°	112.5°	135°	157.5°	180°
0°	462.2	462.2	462.2	462.2	462.2	462.2
1°	472.2	461.0	455.5	454.3	444.3	447.6
2°	485.6	461.0	443.2	424.2	418.6	416.4
3°	491.2	452.1	428.7	400.8	396.3	387.4
4°	501.2	463.3	417.5	386.3	368.4	362.8
5°	509.0	451.0	405.2	368.4	347.2	334.9
6°	523.6	449.9	387.4	348.3	319.3	320.4
7°	522.4	438.7	375.1	332.7	302.5	298.1
8°	528.0	430.9	358.3	315.9	285.8	278.0
9°	525.8	428.7	346.1	296.9	272.4	265.7
10°	539.2	405.2	331.6	279.1	256.8	245.6
11°	541.4	408.6	319.3	267.9	241.1	230.0
12°	537.0	389.6	305.9	251.2	226.6	215.5
13°	542.5	384.0	291.4	240.0	213.2	203.2
14°	538.1	372.9	279.1	225.5	199.8	193.1
15°	529.1	363.9	266.8	212.1	190.9	179.7
16°	523.6	349.4	253.4	202.1	180.8	170.8
17°	518.0	338.2	238.9	188.7	168.6	159.6
18°	516.9	324.9	230.0	176.4	158.5	152.9
19°	502.4	313.7	215.5	169.7	150.7	142.9
20°	496.8	301.4	205.4	160.8	142.9	134.0
21°	478.9	291.4	196.5	147.4	135.1	128.4
22.5°	473.3	269.0	179.7	139.5	121.7	118.3
23°	455.5	265.7	175.3	134.0	122.8	113.9
24°	448.8	255.6	167.5	127.3	115.0	109.4
25°	439.8	244.5	156.3	119.4	107.2	103.8
26°	426.4	232.2	146.2	113.9	101.6	98.2
27°	407.5	215.5	138.4	108.3	97.1	93.8
28°	392.9	211.0	132.8	101.6	92.7	90.4
29°	381.8	194.2	121.7	97.1	88.2	86.0
30°	361.7	185.3	117.2	91.5	84.8	82.6
32.5°	321.5	159.6	100.5	79.3	73.7	73.7
35°	284.7	137.3	84.8	69.2	67.0	67.0
37.5°	250.1	117.2	73.7	61.4	59.2	60.3
40°	209.9	100.5	64.7	53.6	53.6	54.7
42.5°	169.7	83.7	54.7	46.9	48.0	49.1
45°	137.3	69.2	48.0	41.3	43.5	43.5
47.5°	109.4	55.8	40.2	36.8	40.2	39.1
50°	82.6	44.7	34.6	33.5	35.7	35.7
52.5°	63.6	36.8	30.1	30.1	32.4	32.4
55°	46.9	30.1	26.8	26.8	29.0	30.1
57.5°	34.6	25.7	23.4	23.4	26.8	27.9
60°	26.8	22.3	20.1	22.3	24.6	24.6
62.5°	21.2	19.0	19.0	20.1	22.3	23.4
65°	15.6	15.6	16.7	17.9	20.1	21.2



TEST NUMBER: P275378

CATALOG NUMBER: ML4D09_935 - TIR50AWW25 - TL45R6GMWWB - TL46S6GMWWB

CANDELA DISTRIBUTION (continued):

	67.5°	90°	112.5°	135°	157.5°	180°
67.5°	12.3	13.4	14.5	15.6	17.9	17.9
70°	8.9	11.2	12.3	14.5	15.6	16.7
72.5°	6.7	8.9	10.0	12.3	14.5	14.5
75°	5.6	6.7	8.9	11.2	12.3	12.3
77.5°	4.5	5.6	7.8	8.9	11.2	11.2
80°	3.3	4.5	5.6	7.8	8.9	8.9
82.5°	3.3	3.3	4.5	5.6	6.7	6.7
85°	2.2	2.2	2.2	3.3	4.5	4.5
87.5°	1.1	1.1	1.1	1.1	2.2	2.2
90°	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)