

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 COMMERCIAL

Report Number: P584090

Luminaire Tested: **HC820D010-HM80520940-81RWWH**

Issue Date: 10/21/2021

**Test Information**

Test Method: LM-41-14  
Report Number: P584090  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2109-368-15)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 10/21/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO COMMERCIAL  
Catalog Number: HC820D010-HM80520940-81RWWH  
Description: HALO COMMERCIAL 8" ROUND, NEW CONSTRUCTION FRAME, WITH 8" WALLWASH DISTRIBUTION, HAZE TRIM  
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1970.0 lumens  
Efficiency: N/A  
Efficacy: 98.5 lumens/watt  
Spacing Criteria (0/90/45): 1.13 / 1.07 / 1.16  
Luminous Opening: Circular (Dia: 0.67' x H: 0')  
CIE Type: Direct

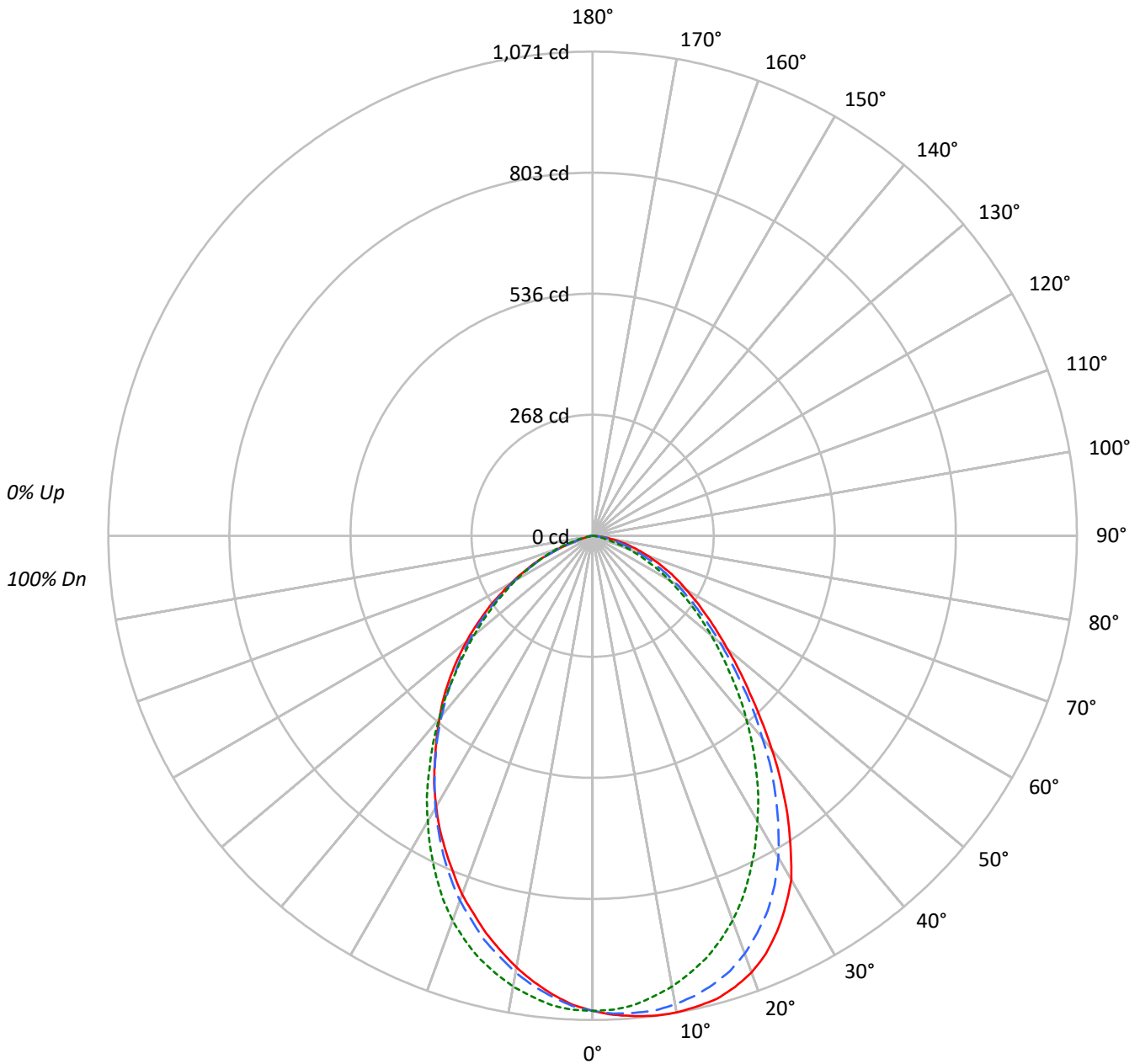
Input Watts (W): 20  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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				
1	111	107	104	100	108	105	102	99	101	98	96	97	95	93	93	92	90	88				88				
2	103	96	90	85	100	94	89	84	90	86	82	87	84	80	84	81	79	77				77				
3	95	86	79	73	92	84	78	73	81	76	71	79	74	70	76	72	69	67				67				
4	88	77	70	64	86	76	69	63	74	67	63	71	66	62	69	65	61	59				59				
5	81	70	62	56	79	69	62	56	67	60	55	65	59	55	63	58	54	52				52				
6	76	64	56	50	74	63	55	50	61	54	49	60	54	49	58	53	49	47				47				
7	71	58	51	45	69	58	50	45	56	49	45	55	49	44	54	48	44	42				42				
8	66	54	46	41	65	53	46	41	52	45	40	51	45	40	50	44	40	38				38				
9	62	50	42	37	61	49	42	37	48	41	37	47	41	37	46	41	36	35				35				
10	58	46	39	34	57	46	39	34	45	38	34	44	38	34	43	38	34	32				32				

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	32406	32406	32406
5°	33013	32263	31517
10°	33529	31700	30363
15°	33865	30912	29048
20°	33737	29718	27709
25°	32850	28002	26161
30°	31284	25961	24643
35°	28252	23693	22888
40°	24817	21262	21206
45°	21421	18691	19502
50°	18652	16392	17486
55°	16537	14241	15231
60°	14752	12026	12649
65°	13302	9763	9982
70°	11811	7321	5905
75°	10187	4241	2550
80°	7831	1509	764
85°	5024	495	495



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	98.6	5.0
10°-20°	274.6	13.9
20°-30°	388.4	19.7
30°-40°	409.3	20.8
40°-50°	347.8	17.7
50°-60°	250.5	12.7
60°-70°	144.5	7.3
70°-80°	49.4	2.5
80°-90°	6.8	0.3
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°	761.7	38.7
0°-40°	1171.0	59.4
0°-60°	1769.3	89.8
0°-90°	1970.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1970.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1051	1051	1051	1051	1051	
5°	1066	1059	1042	1024	1018	102
15°	1061	1028	968	926	910	299
25°	966	916	823	780	769	443
35°	750	706	629	607	608	467
45°	491	468	429	431	447	382
55°	308	283	265	275	283	277
65°	182	157	134	131	137	181
75°	86	64	36	23	21	90
85°	14	8	1	1	1	19
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9
2.5°	1060.8	1062.3	1060.8	1060.8	1059.4	1058.0	1056.6	1055.2	1052.3	1049.5	1049.5
5°	1066.5	1069.4	1066.5	1066.5	1062.3	1059.4	1056.6	1052.3	1046.7	1042.3	1042.3
7.5°	1070.8	1070.8	1070.8	1066.5	1063.7	1059.4	1052.3	1045.1	1038.0	1030.9	1028.1
10°	1070.8	1070.8	1069.4	1063.7	1060.8	1052.3	1045.1	1035.2	1025.3	1015.2	1012.4
12.5°	1066.5	1067.9	1065.1	1059.4	1052.3	1042.3	1032.4	1019.6	1008.1	996.8	991.1
15°	1060.8	1059.4	1056.6	1049.5	1040.9	1028.1	1018.2	1003.9	988.3	974.0	968.3
17.5°	1046.7	1046.7	1042.3	1035.2	1023.8	1009.5	993.9	978.2	961.2	945.5	938.4
20°	1028.1	1028.1	1022.4	1013.8	1002.5	983.9	966.9	948.3	928.5	912.7	905.6
22.5°	1001.0	1002.5	995.4	985.4	972.5	951.2	934.1	911.3	891.3	872.9	867.2
25°	965.5	968.3	961.2	951.2	934.1	915.6	894.3	872.9	850.1	831.5	823.0
27.5°	924.1	925.6	918.4	908.5	891.3	871.5	850.1	827.3	806.0	786.0	777.5
30°	878.6	872.9	870.1	857.2	838.7	821.6	797.4	778.9	756.1	739.0	729.1
32.5°	814.5	817.4	808.8	798.8	784.6	764.6	744.8	723.4	702.0	689.2	682.1
35°	750.5	753.3	749.0	739.0	723.4	706.2	686.4	670.7	652.2	636.5	629.4
37.5°	683.6	683.6	680.6	674.9	663.6	647.9	628.0	612.3	596.7	583.8	579.5
40°	616.5	613.7	612.3	608.0	598.1	583.8	571.0	558.1	542.5	534.0	528.2
42.5°	551.0	551.0	548.2	544.0	534.0	526.8	514.1	499.7	488.4	479.9	479.9
45°	491.2	492.7	488.4	485.6	479.9	468.4	457.1	447.2	437.1	431.4	428.6
47.5°	438.5	438.5	434.3	431.4	425.8	415.8	405.8	397.3	390.2	385.9	384.5
50°	388.8	388.8	388.8	381.7	374.5	367.4	360.3	350.3	346.0	343.1	341.7
52.5°	346.0	344.6	344.6	338.9	331.8	323.3	316.1	307.6	303.3	300.5	301.9
55°	307.6	307.6	306.1	299.0	292.0	283.3	276.2	269.1	266.3	263.5	264.9
56°	292.0	292.0	290.5	284.7	276.2	269.1	260.6	253.4	249.2	250.6	250.6
57°	280.5	277.7	277.7	270.6	263.5	253.4	246.3	239.2	236.4	235.0	235.0
58°	266.3	264.9	263.5	256.3	249.2	240.7	233.6	226.4	222.1	222.1	220.7
59°	252.0	252.0	249.2	243.5	236.4	227.9	220.7	213.6	209.3	207.9	207.9
60°	239.2	240.7	236.4	230.7	224.9	215.0	206.5	200.8	196.4	195.0	195.0
61°	227.9	227.9	224.9	217.8	210.8	203.7	195.0	187.9	185.1	182.3	182.3
62°	217.8	215.0	213.6	206.5	199.4	190.8	183.7	176.6	172.3	169.5	170.9
63°	205.1	203.7	200.8	195.0	187.9	179.4	170.9	165.1	160.9	156.6	158.0
64°	195.0	193.6	189.4	183.7	176.6	168.1	159.5	153.8	150.9	146.7	145.3
65°	182.3	180.8	179.4	172.3	165.1	156.6	149.5	143.8	139.6	136.8	133.8
66°	170.9	172.3	169.5	163.7	155.2	148.1	138.2	132.4	129.5	125.3	122.5
67°	160.9	160.9	158.0	152.4	143.8	136.8	129.5	122.5	118.2	113.9	112.5
67.5°	155.2	155.2	152.4	145.3	139.6	131.0	123.9	118.2	112.5	109.7	106.9
68°	149.5	149.5	148.1	142.4	135.2	126.7	119.6	112.5	106.9	102.5	101.1
69°	139.6	141.0	138.2	132.4	125.3	116.8	109.7	103.9	98.2	94.0	91.1
70°	131.0	129.5	126.7	121.0	113.9	108.3	101.1	94.0	88.3	82.6	81.2
71°	119.6	119.6	116.8	112.5	105.3	98.2	91.1	85.5	79.8	72.6	71.2
72°	111.1	111.1	108.3	102.5	96.8	89.7	82.6	75.4	71.2	64.1	61.2
72.5°	105.3	106.9	103.9	98.2	92.6	84.0	78.4	72.6	65.5	59.8	57.0
73°	102.5	101.1	99.6	94.0	86.9	81.2	74.0	68.3	61.2	55.6	52.7



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
77.5°	64.1	64.1	62.6	57.0	51.3	45.6	39.8	34.2	28.5	22.8	20.0
80°	44.1	45.6	42.7	39.8	35.6	29.9	24.2	20.0	14.2	11.3	8.5
82.5°	28.5	28.5	27.1	24.2	21.4	17.1	14.2	9.9	7.1	5.7	4.3
85°	14.2	15.7	14.2	12.8	9.9	8.5	7.1	4.3	2.8	1.4	1.4
87.5°	5.7	5.7	5.7	4.3	4.3	2.8	1.4	1.4	1.4	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):**

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9	1050.9
2.5°	1046.7	1046.7	1043.7	1042.3	1040.9	1039.5	1038.0	1036.6	1036.6	1038.0
5°	1038.0	1035.2	1029.5	1028.1	1023.8	1022.4	1019.6	1018.2	1019.6	1018.2
7.5°	1025.3	1019.6	1012.4	1009.5	1003.9	1001.0	996.8	996.8	993.9	995.4
10°	1008.1	999.6	991.1	985.4	981.1	976.8	974.0	971.1	969.7	969.7
12.5°	986.9	976.8	968.3	959.8	952.6	949.7	944.1	944.1	941.2	939.8
15°	962.6	949.7	939.8	931.3	925.6	919.8	915.6	912.7	909.9	909.9
17.5°	931.3	919.8	909.9	900.0	891.3	887.1	882.8	878.6	878.6	875.7
20°	897.1	884.3	875.7	865.8	858.6	851.5	845.8	845.8	843.0	844.4
22.5°	858.6	843.0	834.5	827.3	820.2	814.5	808.8	808.8	807.4	806.0
25°	815.9	803.1	793.1	784.6	780.4	774.7	773.3	770.3	768.9	768.9
27.5°	770.3	760.4	747.6	743.4	737.6	734.7	734.7	733.3	730.5	731.9
30°	722.0	710.5	703.4	700.6	694.9	694.9	693.5	690.6	690.6	692.1
32.5°	674.9	663.6	657.9	656.5	650.7	650.7	649.3	650.7	650.7	652.2
35°	623.7	613.7	612.3	608.0	606.6	606.6	606.6	609.4	612.3	608.0
37.5°	575.3	568.2	563.9	562.5	563.9	563.9	565.4	569.6	568.2	566.8
40°	525.4	519.7	516.9	516.9	519.7	522.6	522.6	526.8	528.2	526.8
42.5°	475.6	471.4	471.4	472.8	475.6	477.1	481.3	485.6	487.0	488.4
45°	428.6	428.6	428.6	430.0	431.4	434.3	440.1	444.3	445.7	447.2
47.5°	383.1	381.7	385.9	387.3	391.6	393.0	397.3	402.9	404.4	405.8
50°	340.3	343.1	344.6	348.9	351.8	351.8	357.4	360.3	364.5	364.5
52.5°	300.5	304.7	306.1	310.4	311.8	313.2	316.1	320.4	323.3	323.3
55°	264.9	266.3	269.1	270.6	274.8	276.2	279.1	280.5	284.7	283.3
56°	249.2	252.0	253.4	256.3	259.2	260.6	263.5	264.9	267.7	269.1
57°	235.0	236.4	240.7	242.1	244.9	244.9	246.3	250.6	250.6	252.0
58°	220.7	223.5	224.9	226.4	229.3	230.7	233.6	235.0	236.4	235.0
59°	207.9	209.3	210.8	210.8	213.6	213.6	217.8	220.7	222.1	222.1
60°	195.0	195.0	196.4	198.0	200.8	202.2	202.2	205.1	205.1	205.1
61°	182.3	182.3	183.7	185.1	186.5	186.5	189.4	189.4	190.8	192.2
62°	170.9	169.5	169.5	170.9	170.9	173.8	175.2	176.6	178.0	176.6
63°	158.0	156.6	156.6	156.6	156.6	159.5	159.5	160.9	163.7	162.3
64°	143.8	143.8	143.8	143.8	145.3	145.3	148.1	149.5	150.9	152.4
65°	133.8	131.0	129.5	129.5	131.0	132.4	133.8	135.2	136.8	136.8
66°	122.5	119.6	118.2	118.2	118.2	118.2	121.0	121.0	123.9	123.9
67°	109.7	106.9	105.3	103.9	103.9	103.9	108.3	106.9	106.9	106.9
67.5°	105.3	101.1	99.6	98.2	96.8	99.6	98.2	99.6	99.6	98.2
68°	99.6	96.8	94.0	91.1	91.1	91.1	92.6	94.0	92.6	91.1
69°	88.3	86.9	82.6	79.8	78.4	79.8	78.4	79.8	78.4	79.8
70°	78.4	74.0	69.7	68.3	66.9	66.9	66.9	65.5	66.9	65.5
71°	68.3	64.1	59.8	57.0	55.6	55.6	54.1	55.6	54.1	55.6
72°	58.4	54.1	48.5	45.6	45.6	45.6	45.6	44.1	45.6	44.1
72.5°	54.1	48.5	44.1	41.3	39.8	39.8	39.8	39.8	38.4	39.8
73°	49.9	44.1	38.4	37.0	37.0	37.0	35.6	34.2	35.6	35.6





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**CANDELA DISTRIBUTION (continued):**

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
77.5°	17.1	12.8	11.3	11.3	11.3	11.3	11.3	11.3	9.9	9.9
80°	7.1	5.7	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
82.5°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
85°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
87.5°	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



Report Generated By 670245859 / DESKTOP-HRDQ47P





— 0°-180°    - - 45°-225°    - - - - 90°-270°







74°	92.6	92.6	89.7	85.5	78.4	71.2	65.5	59.8	52.7	45.6	42.7
75°	85.5	84.0	81.2	76.9	71.2	64.1	58.4	51.3	45.6	38.4	35.6







74°	41.3	34.2	31.3	28.5	28.5	28.5	27.1	27.1	27.1	28.5
75°	32.7	27.1	24.2	21.4	22.8	21.4	22.8	21.4	21.4	21.4



(END OF REPORT)