

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: P85095

Luminaire Tested: **ELSG405835TBZ (25deg Beam-35deg tilt)**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P85095
Test Lab: INNOVATION CENTER P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: ELSG405835TBZ (25deg Beam-35deg tilt)
Description: HALO 4 INCH RECESSED FIXTURE WITH SQUARE TUSCAN BRONZE TRIM, TUSCAN BRONZE GIMBAL, NARROW UPPER REFLECTOR AND CLEAR LENS .
---ABSOLUTE PHOTOMETRY IS BASED ON CALIBRATION FACTORS
CREATED USING A 500 WATT, NIST TRACEABLE, OMNI-DIRECTIONAL LAB LUMEN STANDARD IN THE GONIOPHOTOMETER WITH TEST DISTANCE OF 28.75 FEET----
Light Source: (1) SMT LED 3500K
(1) SMT LED 3500K
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: 625 (1 lamp)
Luminaire Lumens: 624.2 lumens
Efficiency: 99.9%
Efficacy: 45.9 lumens/watt
Spacing Criteria (0/90/45): 2.59 / 0.66 / 1.56
Luminous Opening: Vertical Cylinder (Dia: 0.33' x H: 0.1')
CIE Type: Direct

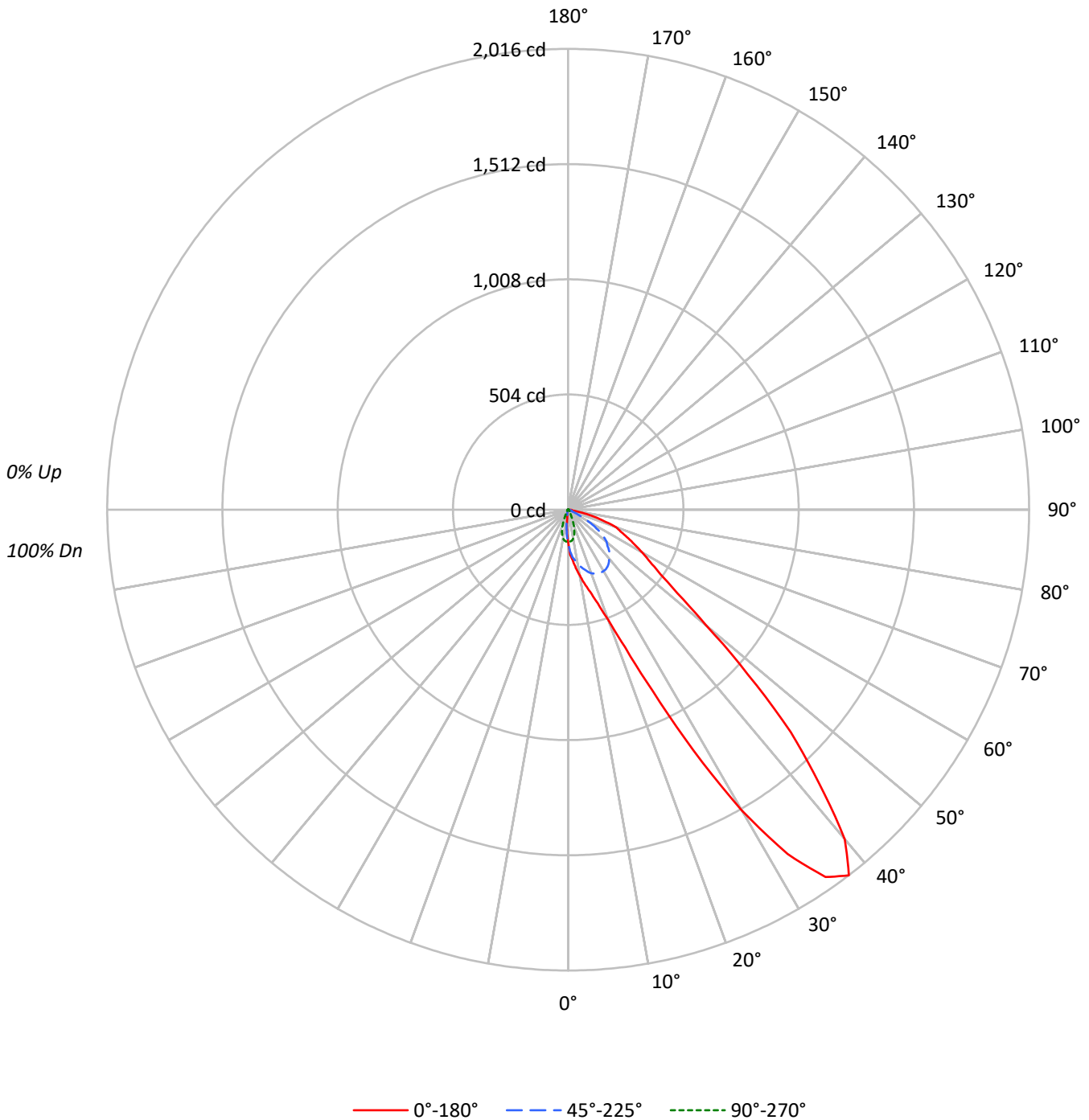
Input Watts (W): 13.6
Input Voltage (V): NR
Input Current (Ain): 0.1191
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	89					87				
2	101	93	87	82	98	92	86	81	88	83	79	85	81	77	82	79	76					74				
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65					63				
4	85	73	65	59	82	72	64	58	69	63	57	67	61	57	65	60	56					54				
5	78	65	57	50	76	64	56	50	62	55	49	60	54	49	58	53	48					46				
6	72	59	50	44	70	58	49	43	56	48	43	54	48	43	53	47	42					40				
7	66	53	44	38	64	52	44	38	50	43	38	49	42	37	48	42	37					35				
8	61	48	39	34	60	47	39	33	46	38	33	45	38	33	43	37	33					31				
9	57	43	35	30	55	43	35	30	42	35	30	41	34	29	40	34	29					27				
10	53	40	32	27	52	39	32	27	38	31	26	37	31	26	36	30	26					24				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	17416	17416	17416
5°	26515	16546	7704
10°	34265	14961	1983
15°	43104	12082	1460
20°	59153	7894	484
25°	100815	3893	243
30°	177233	1844	128
35°	233031	1628	131
40°	229542	1414	134
45°	173620	669	0
50°	103685	422	0
55°	68486	153	0
60°	55244	163	0
65°	45324	176	0
70°	39135	194	0
75°	22359	216	0
80°	3791	247	247
85°	3613	290	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture	% Lamp
0°-10°	13.4	2.2	2.1
10°-20°	42.1	6.7	6.7
20°-30°	92.4	14.8	14.8
30°-40°	167.1	26.8	26.7
40°-50°	147.7	23.7	23.6
50°-60°	87.5	14.0	14.0
60°-70°	52.2	8.4	8.3
70°-80°	18.7	3.0	3.0
80°-90°	3.0	0.5	0.5
90°-100°	0.0	0.0	0.0
100°-110°	0.0	0.0	0.0
110°-120°	0.0	0.0	0.0
120°-130°	0.0	0.0	0.0
130°-140°	0.0	0.0	0.0
140°-150°	0.0	0.0	0.0
150°-160°	0.0	0.0	0.0
160°-170°	0.0	0.0	0.0
170°-180°	0.0	0.0	0.0
0°-30°	148.0	23.7	23.7
0°-40°	315.1	50.5	50.4
0°-60°	550.3	88.2	88.0
0°-90°	624.2	100.0	99.9
90°-120°	0.0	0.0	0.0
90°-150°	0.0	0.0	0.0
90°-180°	0.0	0.0	0.0
0°-180°	624.2	100.0	99.9

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	141	141	141	141	141	
5°	221	208	138	80	64	23
15°	372	270	104	14	13	112
25°	873	308	34	5	2	445
35°	1962	301	14	1	1	1177
45°	1376	253	5	1	0	1034
55°	492	169	1	1	0	467
65°	282	34	1	1	0	285
75°	114	12	1	1	0	121
85°	14	2	1	1	0	13
90°	0	0	0	0	0	



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CATALOG NUMBER: ELSG405835TBZ (25deg Beam-35deg tilt)

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	141.2	141.2	141.2	141.2	141.2	141.2	141.2	141.2	141.2	141.2	141.2
2.5°	197.1	196.0	196.0	195.0	193.9	191.8	190.8	186.6	183.4	180.2	176.0
5°	221.3	220.3	220.3	219.2	218.2	217.1	216.1	214.0	210.8	207.6	203.4
7.5°	257.2	256.1	256.1	253.0	248.7	244.5	239.3	232.9	227.7	221.3	216.1
10°	292.0	289.9	287.7	282.5	277.2	269.8	264.6	258.2	248.7	240.3	230.8
12.5°	331.0	329.9	326.7	320.4	313.0	302.5	293.0	279.3	266.7	256.1	244.5
15°	372.1	371.0	365.7	357.3	345.7	332.0	318.3	302.5	285.6	269.8	256.1
17.5°	429.0	425.8	417.4	403.7	383.7	363.6	345.7	324.6	304.6	284.6	265.6
20°	513.3	508.0	492.2	465.9	436.4	405.8	374.2	344.7	319.4	296.2	273.0
22.5°	652.4	641.9	608.2	558.6	504.9	453.2	409.0	365.7	332.0	302.5	277.2
25°	872.7	846.4	773.6	684.0	594.5	510.1	445.8	388.9	343.6	307.8	277.2
27.5°	1184.7	1135.2	1006.6	844.3	691.4	569.2	477.5	409.0	351.0	309.9	276.1
30°	1518.8	1451.4	1259.5	1021.3	790.5	618.7	499.6	421.6	356.3	309.9	273.0
32.5°	1785.5	1711.7	1463.0	1163.6	872.7	649.3	507.0	423.7	356.3	307.8	268.8
35°	1961.5	1896.2	1584.2	1236.3	909.6	653.5	501.7	416.3	351.0	301.4	263.5
37.5°	2016.3	1935.2	1592.6	1230.0	891.7	631.3	483.8	401.6	339.4	292.0	254.0
40°	1882.5	1782.3	1484.0	1148.9	823.2	588.1	461.7	382.6	327.8	279.3	243.5
42.5°	1625.3	1543.1	1304.9	1002.4	720.9	533.3	434.3	362.6	310.9	266.7	227.7
45°	1375.5	1292.2	1083.5	826.3	619.8	483.8	404.7	342.6	293.0	253.0	216.1
47.5°	1065.6	1001.3	846.4	678.8	537.5	444.8	374.2	319.4	274.0	232.9	199.2
50°	786.3	749.4	666.1	566.0	477.5	401.6	345.7	295.1	255.1	219.2	172.9
52.5°	601.8	581.8	537.5	481.7	418.4	359.4	312.0	269.8	235.0	198.2	142.3
55°	492.2	481.7	457.4	414.2	367.8	320.4	281.4	248.7	215.0	168.6	112.8
57.5°	423.7	414.2	394.2	361.5	324.6	286.7	256.1	227.7	190.8	134.9	82.2
60°	372.1	365.7	346.8	320.4	288.8	259.3	235.0	204.5	158.1	101.2	49.5
62.5°	325.7	320.4	305.7	283.5	259.3	235.0	212.9	173.9	119.1	65.3	25.3
65°	282.5	279.3	270.9	254.0	235.0	212.9	182.3	132.8	79.1	33.7	15.8
67.5°	246.6	244.5	238.2	226.6	208.7	182.3	142.3	86.4	43.2	19.0	14.8
70°	222.4	219.2	211.9	196.0	173.9	137.0	90.6	47.4	21.1	14.8	12.6
72.5°	161.3	161.3	159.2	147.6	122.3	86.4	49.5	24.2	14.8	12.6	11.6
75°	113.8	112.8	111.7	100.1	73.8	43.2	24.2	14.8	12.6	11.6	7.4
77.5°	64.3	64.3	64.3	52.7	34.8	20.0	15.8	13.7	11.6	8.4	5.3
80°	16.9	15.8	16.9	16.9	15.8	13.7	12.6	11.6	9.5	4.2	3.2
82.5°	12.6	11.6	12.6	12.6	12.6	11.6	11.6	8.4	4.2	2.1	2.1
85°	13.7	12.6	13.7	11.6	11.6	9.5	9.5	5.3	3.2	2.1	2.1
87.5°	11.6	11.6	10.5	9.5	8.4	6.3	5.3	3.2	2.1	2.1	2.1
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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CATALOG NUMBER: ELSG405835TBZ (25deg Beam-35deg tilt)

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	112.5°	135°	157.5°
0°	141.2	141.2	141.2	141.2	141.2	141.2	141.2	141.2	141.2	141.2	141.2
2.5°	170.7	166.5	161.3	156.0	150.7	147.6	143.3	141.2	130.7	120.2	108.6
5°	197.1	190.8	181.3	171.8	161.3	152.8	144.4	138.1	111.7	80.1	68.5
7.5°	210.8	204.5	196.0	185.5	170.7	157.0	144.4	134.9	86.4	54.8	27.4
10°	222.4	211.9	202.4	191.8	177.1	159.2	141.2	127.5	65.3	22.1	16.9
12.5°	231.9	220.3	206.6	193.9	178.1	157.0	134.9	117.0	42.2	16.9	13.7
15°	241.4	226.6	211.9	195.0	176.0	152.8	125.4	104.3	22.1	13.7	12.6
17.5°	249.8	231.9	215.0	195.0	172.9	143.3	112.8	88.5	15.8	13.7	10.5
20°	254.0	235.0	215.0	192.9	166.5	131.8	98.0	68.5	13.7	10.5	5.3
22.5°	255.1	234.0	211.9	187.6	154.9	115.9	79.1	49.5	12.6	8.4	2.1
25°	253.0	230.8	206.6	178.1	140.2	97.0	60.1	33.7	12.6	5.3	1.1
27.5°	248.7	224.5	198.2	165.5	121.2	74.8	42.2	23.2	9.5	2.1	1.1
30°	243.5	218.2	188.7	148.6	100.1	55.9	28.5	15.8	7.4	2.1	1.1
32.5°	240.3	210.8	175.0	128.6	75.9	39.0	20.0	14.8	4.2	1.1	1.1
35°	232.9	198.2	157.0	104.3	55.9	25.3	14.8	13.7	2.1	1.1	1.1
37.5°	220.3	183.4	133.9	81.2	36.9	16.9	13.7	13.7	1.1	1.1	0.0
40°	206.6	164.4	109.6	59.0	23.2	14.8	13.7	11.6	1.1	1.1	0.0
42.5°	191.8	139.1	85.4	37.9	15.8	13.7	12.6	8.4	1.1	1.1	0.0
45°	169.7	114.9	60.1	22.1	13.7	12.6	10.5	5.3	1.1	1.1	0.0
47.5°	142.3	88.5	36.9	15.8	12.6	11.6	6.3	4.2	1.1	1.1	0.0
50°	117.0	62.2	21.1	13.7	11.6	9.5	4.2	3.2	1.1	1.1	0.0
52.5°	86.4	35.8	14.8	11.6	9.5	4.2	2.1	1.1	0.0	1.1	0.0
55°	59.0	20.0	12.6	11.6	7.4	3.2	1.1	1.1	1.1	1.1	0.0
57.5°	31.6	15.8	11.6	9.5	4.2	2.1	1.1	2.1	1.1	1.1	0.0
60°	19.0	13.7	11.6	6.3	3.2	2.1	1.1	1.1	1.1	1.1	0.0
62.5°	14.8	12.6	8.4	3.2	1.1	1.1	1.1	1.1	1.1	1.1	0.0
65°	12.6	10.5	4.2	2.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
67.5°	12.6	8.4	3.2	2.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
70°	9.5	4.2	2.1	2.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
72.5°	6.3	4.2	2.1	2.1	1.1	2.1	2.1	1.1	1.1	1.1	0.0
75°	4.2	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
77.5°	2.1	2.1	1.1	1.1	1.1	1.1	1.1	2.1	1.1	1.1	0.0
80°	2.1	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
82.5°	2.1	2.1	1.1	1.1	0.0	1.1	1.1	1.1	0.0	1.1	0.0
85°	2.1	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
87.5°	2.1	2.1	1.1	1.1	1.1	1.1	1.1	2.1	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: P85095

CATALOG NUMBER: ELSG405835TBZ (25deg Beam-35deg tilt)

CANDELA DISTRIBUTION (continued):

	180°
0°	141.2
2.5°	104.3
5°	64.3
7.5°	21.1
10°	16.9
12.5°	12.6
15°	12.6
17.5°	8.4
20°	4.2
22.5°	2.1
25°	2.1
27.5°	1.1
30°	1.1
32.5°	1.1
35°	1.1
37.5°	1.1
40°	1.1
42.5°	0.0
45°	0.0
47.5°	0.0
50°	0.0
52.5°	0.0
55°	0.0
57.5°	0.0
60°	0.0
62.5°	0.0
65°	0.0
67.5°	1.1
70°	0.0
72.5°	1.1
75°	0.0
77.5°	0.0
80°	1.1
82.5°	0.0
85°	0.0
87.5°	1.1
90°	0.0

(END OF REPORT)