

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: P85094

Luminaire Tested: **ELSG405827TBZ (25deg Beam-35deg tilt)**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P85094
Test Lab: INNOVATION CENTER P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: ELSG405827TBZ (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 2700K
(1) SMT LED 2700K
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: 556 (1 lamp)
Luminaire Lumens: 555.7 lumens
Efficiency: 99.9%
Efficacy: 40.9 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

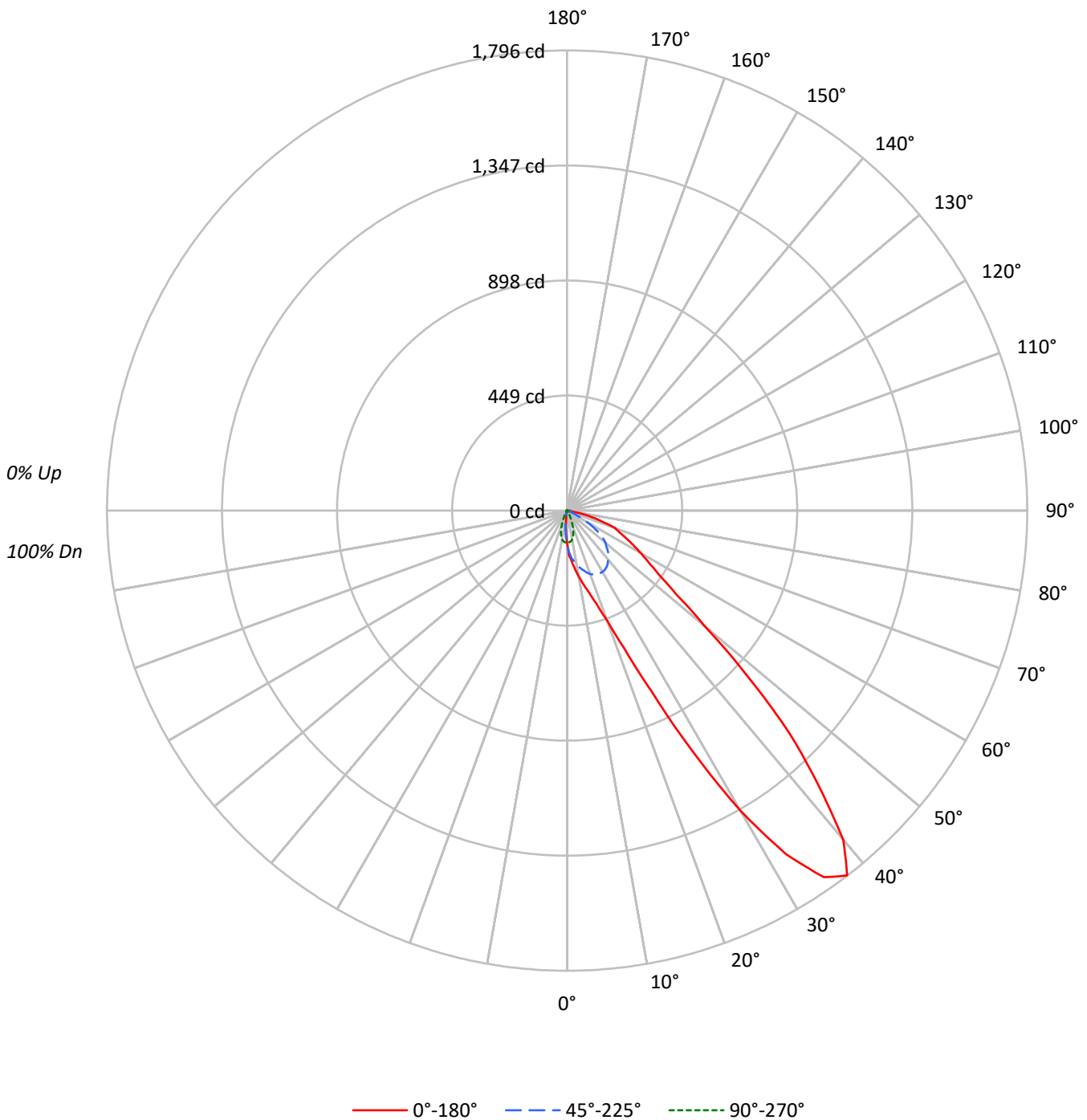
Input Watts (W): 13.6
Input Voltage (V): NR
Input Current (A_{in}): 0.1191
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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CATALOG NUMBER: ELSG405827TBZ (25deg Beam-35deg tilt)

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

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	15517	15517	15517
5°	23615	14737	6865
10°	30510	13330	1760
15°	38378	10762	1309
20°	52676	7030	438
25°	89771	3466	219
30°	157827	1645	105
35°	207512	1449	107
40°	204399	1256	110
45°	154598	593	0
50°	92332	369	0
55°	60986	125	0
60°	49187	134	0
65°	40350	144	0
70°	34842	158	0
75°	19923	177	0
80°	3365	202	202
85°	3218	237	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture	% Lamp
0°-10°	12.0	2.2	2.1
10°-20°	37.5	6.7	6.7
20°-30°	82.3	14.8	14.8
30°-40°	148.8	26.8	26.8
40°-50°	131.5	23.7	23.7
50°-60°	77.9	14.0	14.0
60°-70°	46.4	8.4	8.4
70°-80°	16.6	3.0	3.0
80°-90°	2.7	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°	131.8	23.7	23.7
0°-40°	280.6	50.5	50.5
0°-60°	490.0	88.2	88.1
0°-90°	555.7	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°	555.7	100.0	99.9

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	126	126	126	126	126	
5°	197	185	123	71	57	21
15°	331	240	93	12	11	100
25°	777	274	30	5	2	396
35°	1747	268	12	1	1	1048
45°	1225	225	5	1	0	921
55°	438	150	1	1	0	416
65°	252	30	1	1	0	254
75°	101	10	1	1	0	107
85°	12	2	1	1	0	11
90°	0	0	0	0	0	



TEST NUMBER: P85094

CATALOG NUMBER: ELSG405827TBZ (25deg Beam-35deg tilt)

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	125.8	125.8	125.8	125.8	125.8	125.8	125.8	125.8	125.8	125.8	125.8
2.5°	175.5	174.6	174.6	173.6	172.7	170.8	169.9	166.1	163.3	160.5	156.7
5°	197.1	196.2	196.2	195.2	194.3	193.3	192.4	190.5	187.7	184.9	181.1
7.5°	229.0	228.1	228.1	225.3	221.5	217.7	213.1	207.4	202.7	197.1	192.4
10°	260.0	258.1	256.2	251.5	246.8	240.3	235.6	229.9	221.5	214.0	205.5
12.5°	294.7	293.8	291.0	285.3	278.8	269.4	260.9	248.7	237.5	228.1	217.7
15°	331.3	330.4	325.7	318.2	307.8	295.6	283.4	269.4	254.4	240.3	228.1
17.5°	382.0	379.2	371.7	359.5	341.6	323.8	307.8	289.1	271.2	253.4	236.5
20°	457.1	452.4	438.3	414.8	388.6	361.3	333.2	306.9	284.4	263.7	243.1
22.5°	581.0	571.6	541.6	497.4	449.6	403.6	364.2	325.7	295.6	269.4	246.8
25°	777.1	753.7	688.9	609.1	529.4	454.3	397.0	346.3	306.0	274.1	246.8
27.5°	1054.9	1010.8	896.3	751.8	615.7	506.8	425.2	364.2	312.5	275.9	245.9
30°	1352.5	1292.4	1121.6	909.5	703.9	550.9	444.9	375.4	317.2	275.9	243.1
32.5°	1589.9	1524.2	1302.7	1036.2	777.1	578.2	451.5	377.3	317.2	274.1	239.3
35°	1746.7	1688.5	1410.7	1100.9	810.0	581.9	446.8	370.7	312.5	268.4	234.6
37.5°	1795.5	1723.2	1418.2	1095.3	794.0	562.2	430.8	357.6	302.2	260.0	226.2
40°	1676.3	1587.1	1321.5	1023.0	733.0	523.7	411.1	340.7	291.9	248.7	216.8
42.5°	1447.3	1374.1	1161.9	892.6	642.0	474.9	386.7	322.9	276.9	237.5	202.7
45°	1224.8	1150.7	964.8	735.8	551.9	430.8	360.4	305.0	260.9	225.3	192.4
47.5°	948.9	891.6	753.7	604.4	478.7	396.1	333.2	284.4	244.0	207.4	177.4
50°	700.2	667.3	593.2	504.0	425.2	357.6	307.8	262.8	227.1	195.2	153.9
52.5°	535.9	518.1	478.7	428.9	372.6	320.1	277.8	240.3	209.3	176.5	126.7
55°	438.3	428.9	407.3	368.9	327.6	285.3	250.6	221.5	191.5	150.2	100.4
57.5°	377.3	368.9	351.0	321.9	289.1	255.3	228.1	202.7	169.9	120.1	73.2
60°	331.3	325.7	308.8	285.3	257.2	230.9	209.3	182.1	140.8	90.1	44.1
62.5°	290.0	285.3	272.2	252.5	230.9	209.3	189.6	154.9	106.1	58.2	22.5
65°	251.5	248.7	241.2	226.2	209.3	189.6	162.4	118.3	70.4	30.0	14.1
67.5°	219.6	217.7	212.1	201.8	185.8	162.4	126.7	77.0	38.5	16.9	13.1
70°	198.0	195.2	188.7	174.6	154.9	122.0	80.7	42.2	18.8	13.1	11.3
72.5°	143.6	143.6	141.7	131.4	108.9	77.0	44.1	21.6	13.1	11.3	10.3
75°	101.4	100.4	99.5	89.2	65.7	38.5	21.6	13.1	11.3	10.3	6.6
77.5°	57.3	57.3	57.3	46.9	31.0	17.8	14.1	12.2	10.3	7.5	4.7
80°	15.0	14.1	15.0	15.0	14.1	12.2	11.3	10.3	8.4	3.8	2.8
82.5°	11.3	10.3	11.3	11.3	11.3	10.3	10.3	7.5	3.8	1.9	1.9
85°	12.2	11.3	12.2	10.3	10.3	8.4	8.4	4.7	2.8	1.9	1.9
87.5°	10.3	10.3	9.4	8.4	7.5	5.6	4.7	2.8	1.9	1.9	1.9
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: P85094

CATALOG NUMBER: ELSG405827TBZ (25deg Beam-35deg tilt)

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	112.5°	135°	157.5°
0°	125.8	125.8	125.8	125.8	125.8	125.8	125.8	125.8	125.8	125.8	125.8
2.5°	152.0	148.3	143.6	138.9	134.2	131.4	127.6	125.8	116.4	107.0	96.7
5°	175.5	169.9	161.4	153.0	143.6	136.1	128.6	123.0	99.5	71.3	61.0
7.5°	187.7	182.1	174.6	165.2	152.0	139.8	128.6	120.1	77.0	48.8	24.4
10°	198.0	188.7	180.2	170.8	157.7	141.7	125.8	113.6	58.2	19.7	15.0
12.5°	206.5	196.2	184.0	172.7	158.6	139.8	120.1	104.2	37.5	15.0	12.2
15°	214.9	201.8	188.7	173.6	156.7	136.1	111.7	92.9	19.7	12.2	11.3
17.5°	222.4	206.5	191.5	173.6	153.9	127.6	100.4	78.8	14.1	12.2	9.4
20°	226.2	209.3	191.5	171.8	148.3	117.3	87.3	61.0	12.2	9.4	4.7
22.5°	227.1	208.4	188.7	167.1	138.0	103.2	70.4	44.1	11.3	7.5	1.9
25°	225.3	205.5	184.0	158.6	124.8	86.3	53.5	30.0	11.3	4.7	0.9
27.5°	221.5	199.9	176.5	147.4	107.9	66.6	37.5	20.6	8.4	1.9	0.9
30°	216.8	194.3	168.0	132.3	89.2	49.7	25.3	14.1	6.6	1.9	0.9
32.5°	214.0	187.7	155.8	114.5	67.6	34.7	17.8	13.1	3.8	0.9	0.9
35°	207.4	176.5	139.8	92.9	49.7	22.5	13.1	12.2	1.9	0.9	0.9
37.5°	196.2	163.3	119.2	72.3	32.8	15.0	12.2	12.2	0.9	0.9	0.0
40°	184.0	146.4	97.6	52.6	20.6	13.1	12.2	10.3	0.9	0.9	0.0
42.5°	170.8	123.9	76.0	33.8	14.1	12.2	11.3	7.5	0.9	0.9	0.0
45°	151.1	102.3	53.5	19.7	12.2	11.3	9.4	4.7	0.9	0.9	0.0
47.5°	126.7	78.8	32.8	14.1	11.3	10.3	5.6	3.8	0.9	0.9	0.0
50°	104.2	55.4	18.8	12.2	10.3	8.4	3.8	2.8	0.9	0.9	0.0
52.5°	77.0	31.9	13.1	10.3	8.4	3.8	1.9	0.9	0.0	0.9	0.0
55°	52.6	17.8	11.3	10.3	6.6	2.8	0.9	0.9	0.9	0.9	0.0
57.5°	28.2	14.1	10.3	8.4	3.8	1.9	0.9	1.9	0.9	0.9	0.0
60°	16.9	12.2	10.3	5.6	2.8	1.9	0.9	0.9	0.9	0.9	0.0
62.5°	13.1	11.3	7.5	2.8	0.9	0.9	0.9	0.9	0.9	0.9	0.0
65°	11.3	9.4	3.8	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
67.5°	11.3	7.5	2.8	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
70°	8.4	3.8	1.9	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
72.5°	5.6	3.8	1.9	1.9	0.9	1.9	1.9	0.9	0.9	0.9	0.0
75°	3.8	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
77.5°	1.9	1.9	0.9	0.9	0.9	0.9	0.9	1.9	0.9	0.9	0.0
80°	1.9	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
82.5°	1.9	1.9	0.9	0.9	0.0	0.9	0.9	0.9	0.0	0.9	0.0
85°	1.9	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
87.5°	1.9	1.9	0.9	0.9	0.9	0.9	0.9	1.9	0.9	0.9	0.9
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: P85094

CATALOG NUMBER: ELSG405827TBZ (25deg Beam-35deg tilt)

CANDELA DISTRIBUTION (continued):

	180°
0°	125.8
2.5°	92.9
5°	57.3
7.5°	18.8
10°	15.0
12.5°	11.3
15°	11.3
17.5°	7.5
20°	3.8
22.5°	1.9
25°	1.9
27.5°	0.9
30°	0.9
32.5°	0.9
35°	0.9
37.5°	0.9
40°	0.9
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°	0.9
70°	0.0
72.5°	0.9
75°	0.0
77.5°	0.0
80°	0.9
82.5°	0.0
85°	0.0
87.5°	0.9
90°	0.0

(END OF REPORT)