

Scaled data based on original data using
LM-46-04 Photometric Testing of Indoor Luminaires Using High Intensity Discharge or
Incandescent Filament Lamps (Reaffirmed 2012)

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO

Report Number: E395439

Luminaire Tested: **H221-22**

Issue Date: 3/3/2020



Test Information

Test Method: LM-46-04
Report Number: E395439
Test Lab:
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: H221-22
Description: HALO RECESSED FLUOR - RECTANGULAR DROP OPAQUE LENS
Light Source: PL13, 900 LUMENS
Ballast/Driver: -

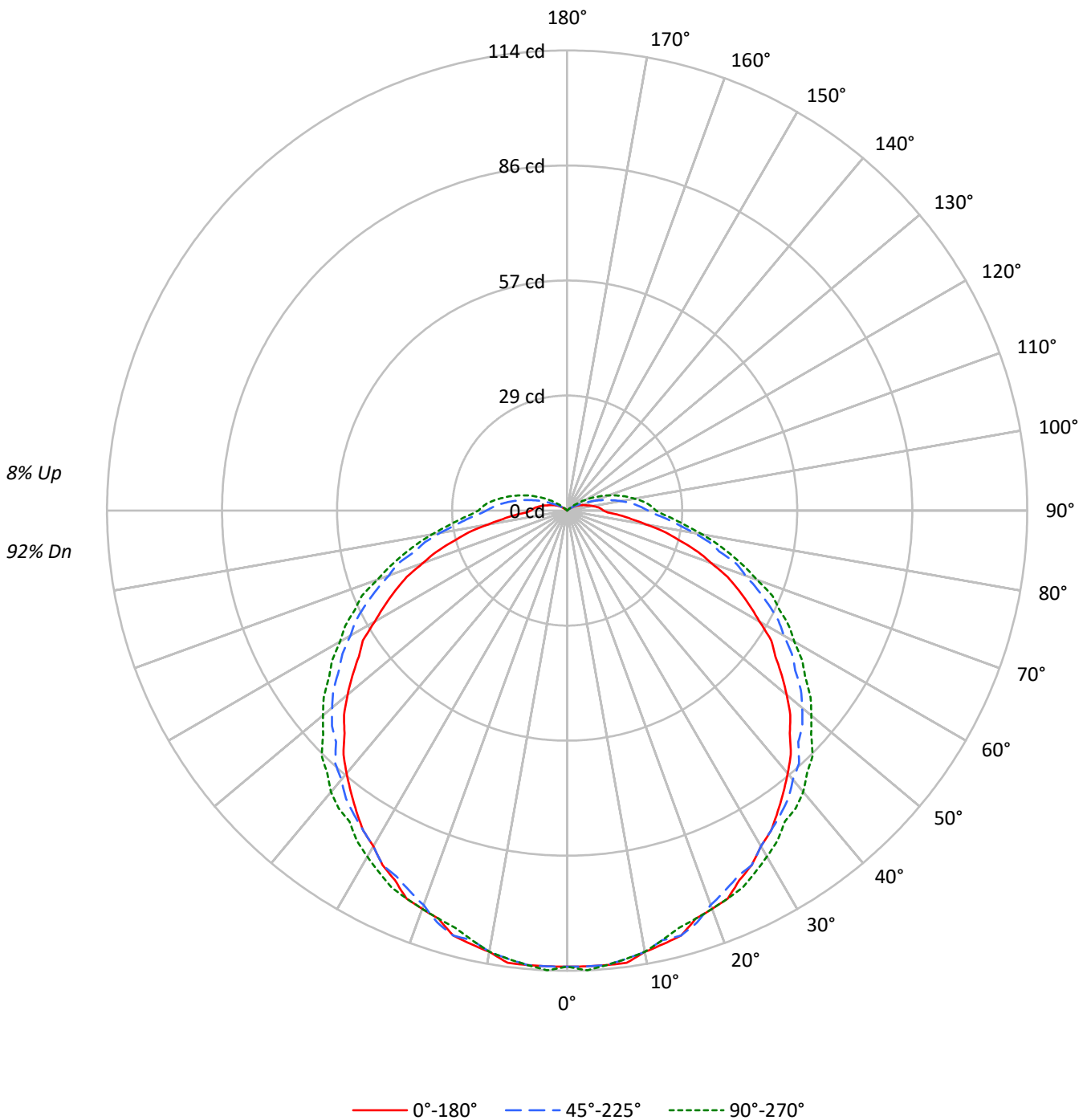
Summary

Lumens per Lamp: 900 (1 lamp)
Luminaire Lumens: 421.7 lumens
Efficiency: 46.9%
Efficacy: 26.4 lumens/watt
Spacing Criteria (0/90/45): 1.27 / 1.31 / 1.43
Luminous Opening: Rectangular w/ Sides (W: 0.61' x L: 0.28' x H: 0.08')
CIE Type: Direct

Input Watts (W): 16
Input Voltage (V): NR
Input Current (A_{in}): 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	0
RCR																		
0	55	55	55	55	53	53	53	53	50	50	50	47	47	47	44	44	44	43
1	49	46	44	42	47	45	43	41	42	40	39	40	38	37	37	36	35	34
2	44	40	36	33	43	39	35	32	36	33	31	34	32	30	32	30	29	27
3	40	35	30	27	38	34	30	27	32	28	26	30	27	25	28	26	24	22
4	36	30	26	23	35	30	25	22	28	24	22	26	23	21	25	22	20	19
5	33	27	23	19	32	26	22	19	25	21	18	23	20	18	22	19	17	16
6	31	24	20	17	30	24	19	16	22	19	16	21	18	16	20	17	15	14
7	29	22	18	15	27	21	17	14	20	17	14	19	16	14	18	15	13	12
8	26	20	16	13	26	19	16	13	18	15	12	18	14	12	17	14	12	11
9	25	18	14	12	24	18	14	11	17	14	11	16	13	11	15	13	11	10
10	23	17	13	10	22	16	13	10	16	12	10	15	12	10	14	12	10	9

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	7121	7121	7121
5°	6974	7067	6974
10°	6763	6943	6763
15°	6606	6744	6606
20°	6379	6721	6379
25°	6197	6749	6197
30°	5997	6697	5997
35°	5834	6624	5834
40°	5640	6744	5640
45°	5407	6776	5407
50°	5193	6698	5193
55°	4916	6663	4916
60°	4637	6676	4637
65°	4346	6750	4346
70°	3923	6773	3923
75°	3417	6866	3417
80°	2770	7076	2770
85°	2204	7812	2204



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ZONAL LUMENS:

Zone	Lumens	% Fixture	% Lamp
0°-10°	10.7	2.5	1.2
10°-20°	30.5	7.2	3.4
20°-30°	46.6	11.1	5.2
30°-40°	57.8	13.7	6.4
40°-50°	62.8	14.9	7.0
50°-60°	61.2	14.5	6.8
60°-70°	53.1	12.6	5.9
70°-80°	39.9	9.5	4.4
80°-90°	25.5	6.0	2.8
90°-100°	16.9	4.0	1.9
100°-110°	10.3	2.4	1.1
110°-120°	5.0	1.2	0.6
120°-130°	1.7	0.4	0.2
130°-140°	0.3	0.1	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°	87.9	20.8	9.8
0°-40°	145.6	34.5	16.2
0°-60°	269.7	64.0	30.0
0°-90°	388.2	92.1	43.1
90°-120°	32.2	7.6	3.6
90°-150°	34.2	8.1	3.8
90°-180°	34.0	8.1	3.8
0°-180°	421.7	100.0	46.9

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	113	113	113	113	113	
5°	113	113	113	113	113	11
15°	109	109	107	109	109	31
25°	101	100	103	100	101	47
35°	91	92	94	92	91	57
45°	78	81	86	81	78	60
55°	63	69	72	69	63	57
65°	47	55	58	55	47	46
75°	29	39	42	39	29	31
85°	13	25	27	25	13	12
90°	9	20	22	20	9	5
95°	8	17	20	17	8	6
105°	5	10	14	10	5	6
115°	3	4	8	4	3	3
125°	1	1	3	1	1	1
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	113	113	113	113	113	113	113	113	113	113	113
2.5°	113	113	113	114	113	113	113	113	113	113	114
5°	113	113	113	112	113	113	113	112	113	112	113
7.5°	113	112	112	113	112	112	112	112	112	112	112
10°	111	111	111	111	111	111	111	111	110	111	111
12.5°	110	110	110	110	110	109	109	110	109	109	109
15°	109	108	109	108	108	109	108	108	107	108	107
17.5°	106	107	107	107	106	107	106	106	107	106	106
20°	105	106	105	105	105	104	104	104	105	105	105
22.5°	104	104	103	102	102	102	102	103	103	104	104
25°	101	101	101	100	100	100	101	102	102	102	103
27.5°	99	99	99	98	98	99	99	100	100	101	101
30°	96	97	96	96	95	96	97	98	99	99	99
32.5°	94	94	93	93	93	94	95	96	96	97	97
35°	91	91	91	90	91	92	93	94	94	95	94
37.5°	88	88	87	87	88	90	90	92	92	93	93
40°	85	85	85	84	86	87	88	89	90	90	91
42.5°	82	82	82	81	83	85	86	87	87	88	88
45°	78	78	78	78	80	81	83	84	84	85	86
47.5°	75	75	74	75	77	79	80	81	82	82	82
50°	71	71	70	72	74	76	77	78	79	79	79
52.5°	67	67	67	69	71	73	74	75	75	76	76
55°	63	64	64	65	68	69	70	72	72	73	72
57.5°	60	59	60	62	64	66	67	68	69	69	69
60°	55	55	56	58	60	62	64	65	65	66	65
62.5°	51	51	52	54	56	59	60	61	62	62	62
65°	47	47	48	51	53	55	56	58	58	58	58
67.5°	43	42	45	46	49	51	53	53	55	54	55
70°	38	38	40	43	45	47	49	50	50	50	50
72.5°	34	34	36	39	42	44	45	46	46	46	46
75°	29	29	32	35	37	39	41	42	42	42	42
77.5°	25	25	28	31	33	36	37	38	38	38	38
80°	20	21	24	27	30	32	33	34	34	34	34
82.5°	16	17	20	23	26	28	30	31	31	31	30
85°	13	14	17	20	23	25	26	27	28	27	27
87.5°	10	11	14	17	20	22	24	25	24	24	24
90°	9	9	12	15	18	20	22	23	23	22	22
95°	8	8	10	12	15	17	18	20	20	20	20
105°	5	5	5	6	8	10	11	12	13	14	14
115°	3	3	3	3	2	4	5	6	8	8	8
125°	1	1	1	1	1	1	1	2	3	3	3
135°	0	0	0	0	0	0	0	0	0	0	0
145°	0	0	0	0	0	0	0	0	0	0	0
155°	0	0	0	0	0	0	0	0	0	0	0
165°	0	0	0	0	0	0	0	0	0	0	0



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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
175°	0	0	0	0	0	0	0	0	0	0	0
180°	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°	113	113	113	113	113	113	113	113	113	113
2.5°	113	113	113	113	113	113	114	113	113	113
5°	112	113	112	113	113	113	112	113	113	113
7.5°	112	112	112	112	112	112	113	112	112	113
10°	111	110	111	111	111	111	111	111	111	111
12.5°	109	109	110	109	109	110	110	110	110	110
15°	108	107	108	108	109	108	108	109	108	109
17.5°	106	107	106	106	107	106	107	107	107	106
20°	105	105	104	104	104	105	105	105	106	105
22.5°	104	103	103	102	102	102	102	103	104	104
25°	102	102	102	101	100	100	100	101	101	101
27.5°	101	100	100	99	99	98	98	99	99	99
30°	99	99	98	97	96	95	96	96	97	96
32.5°	97	96	96	95	94	93	93	93	94	94
35°	95	94	94	93	92	91	90	91	91	91
37.5°	93	92	92	90	90	88	87	87	88	88
40°	90	90	89	88	87	86	84	85	85	85
42.5°	88	87	87	86	85	83	81	82	82	82
45°	85	84	84	83	81	80	78	78	78	78
47.5°	82	82	81	80	79	77	75	74	75	75
50°	79	79	78	77	76	74	72	70	71	71
52.5°	76	75	75	74	73	71	69	67	67	67
55°	73	72	72	70	69	68	65	64	64	63
57.5°	69	69	68	67	66	64	62	60	59	60
60°	66	65	65	64	62	60	58	56	55	55
62.5°	62	62	61	60	59	56	54	52	51	51
65°	58	58	58	56	55	53	51	48	47	47
67.5°	54	55	53	53	51	49	46	45	42	43
70°	50	50	50	49	47	45	43	40	38	38
72.5°	46	46	46	45	44	42	39	36	34	34
75°	42	42	42	41	39	37	35	32	29	29
77.5°	38	38	38	37	36	33	31	28	25	25
80°	34	34	34	33	32	30	27	24	21	20
82.5°	31	31	31	30	28	26	23	20	17	16
85°	27	28	27	26	25	23	20	17	14	13
87.5°	24	24	25	24	22	20	17	14	11	10
90°	22	23	23	22	20	18	15	12	9	9
95°	20	20	20	18	17	15	12	10	8	8
105°	14	13	12	11	10	8	6	5	5	5
115°	8	8	6	5	4	2	3	3	3	3
125°	3	3	2	1	1	1	1	1	1	1
135°	0	0	0	0	0	0	0	0	0	0
145°	0	0	0	0	0	0	0	0	0	0
155°	0	0	0	0	0	0	0	0	0	0
165°	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°
175°	0	0	0	0	0	0	0	0	0	0
180°	0	0	0	0	0	0	0	0	0	0

(END OF REPORT)