

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: P21160-R2

Luminaire Tested: **EL405830-TL409WHWW**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P21160-R2
Test Lab: INNOVATION CENTER P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: EL405830-TL409WHWW
Description: ****THIS IS A REVISION OF P21160 TO UPDATE CATALOG NUMBER AND AVERAGING DATA****HALO 4 INCH RECESSED FIXTURE WALL WASH WITH WHITE ROUND TRIM, WHITE REFLECTOR, SPECULAR KICKER AND SOFT FOCUS 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 3000K
(1) 14 WATTS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: 567 (1 lamp)
Luminaire Lumens: 567.6 lumens
Efficiency: 100.1%
Efficacy: 41.4 lumens/watt
Spacing Criteria (0/90/45): 1.17 / 1.18 / 1.22
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

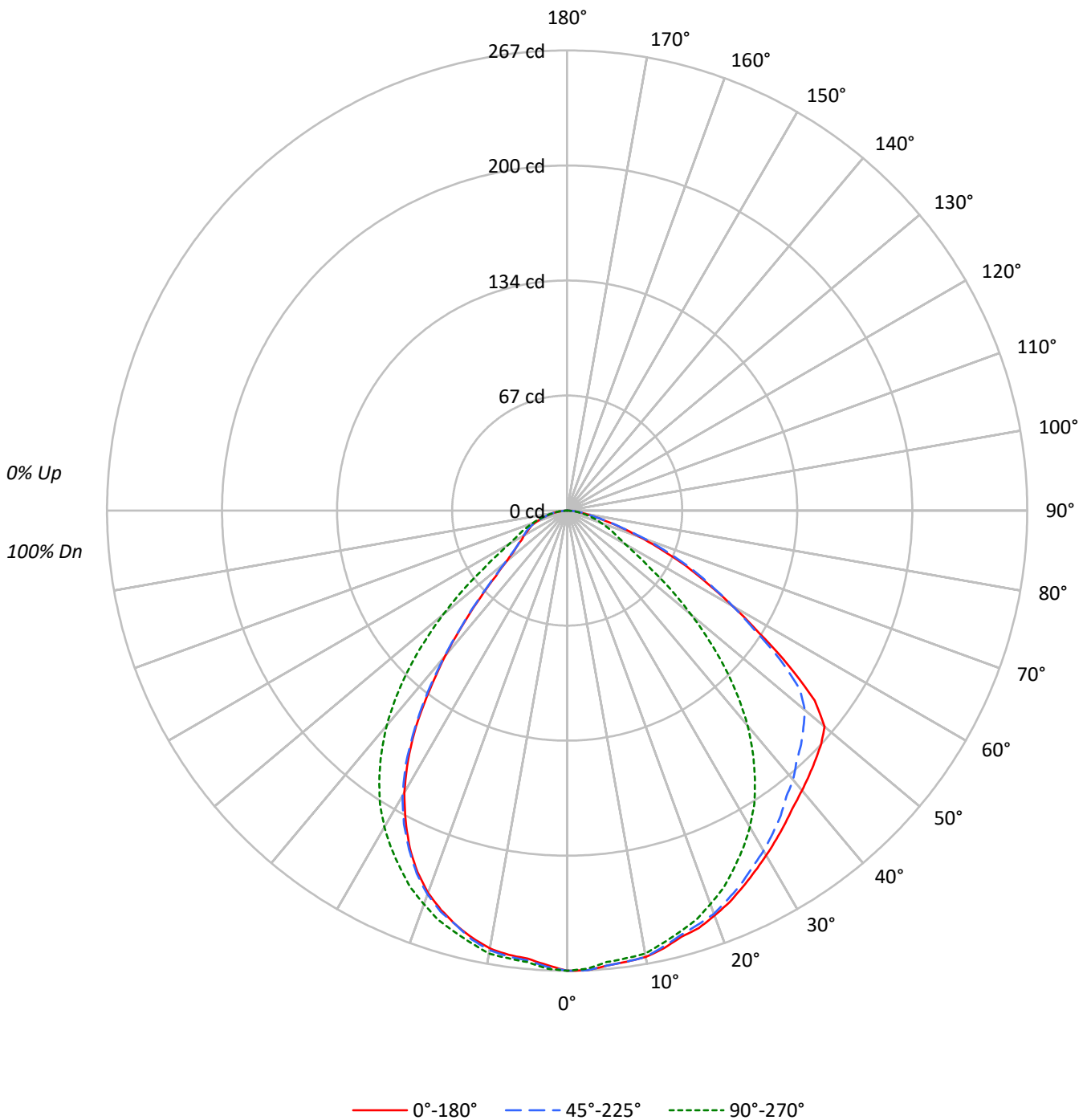
Input Watts (W): 13.7
Input Voltage (V): NR
Input Current (A_{in}): 0.12012
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P21160-R2

CATALOG NUMBER: EL405830-TL409WHWW

Luminous Intensity Polar Plot





TEST NUMBER: P21160-R2

CATALOG NUMBER: EL405830-TL409WHWW

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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	111	106	103	99	108	104	101	98	100	97	95	96	94	92	93	91	89	87
2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77	75
3	94	84	77	71	91	83	76	71	80	74	69	77	72	68	75	71	67	65
4	87	76	68	62	84	74	67	61	72	66	60	70	64	60	68	63	59	57
5	80	68	60	54	78	67	60	54	65	58	53	63	57	53	62	56	52	50
6	74	62	54	48	73	61	53	48	59	52	47	58	52	47	56	51	47	45
7	69	57	49	43	68	56	48	43	54	47	42	53	47	42	52	46	42	40
8	65	52	44	39	63	51	44	38	50	43	38	49	43	38	48	42	38	36
9	61	48	40	35	59	47	40	35	46	40	35	45	39	35	44	39	34	33
10	57	44	37	32	56	44	37	32	43	36	32	42	36	32	41	36	32	30

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	32933	32933	32933
5°	32811	32564	32316
10°	32940	32690	32314
15°	32690	32307	31797
20°	32815	31897	30978
25°	32799	31166	29397
30°	32901	30195	26919
35°	33278	28610	23038
40°	34135	26246	17712
45°	35585	22677	12385
50°	37419	18038	8827
55°	33762	12903	7527
60°	27383	9621	7154
65°	22181	8464	7005
70°	16229	7573	6852
75°	10961	6672	6195
80°	7103	5683	5683
85°	5661	5661	4246



TEST NUMBER: P21160-R2

CATALOG NUMBER: EL405830-TL409WHWW

ZONAL LUMENS:

Zone	Lumens	% Fixture	% Lamp
0°-10°	25.1	4.4	4.4
10°-20°	71.3	12.6	12.6
20°-30°	104.9	18.5	18.5
30°-40°	116.1	20.4	20.5
40°-50°	102.6	18.1	18.1
50°-60°	77.5	13.7	13.7
60°-70°	46.4	8.2	8.2
70°-80°	19.5	3.4	3.4
80°-90°	4.3	0.8	0.8
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°	201.3	35.5	35.5
0°-40°	317.4	55.9	56.0
0°-60°	497.5	87.6	87.7
0°-90°	567.6	100.0	100.1
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°	567.6	100.0	100.1

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	267	267	267	267	267	
5°	265	265	263	262	261	25
15°	256	255	253	249	249	73
25°	241	239	229	217	216	111
35°	221	216	190	154	153	139
45°	204	192	130	72	71	158
55°	157	151	60	35	35	139
65°	76	79	29	25	24	75
75°	23	24	14	13	13	26
85°	4	4	4	3	3	5
90°	0	0	0	0	0	



TEST NUMBER: P21160-R2

CATALOG NUMBER: EL405830-TL409WHWW

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	267	267	267	267	267	267	267	267	267	267	267
2.5°	267	267	267	267	267	267	267	267	267	267	267
5°	265	265	265	265	265	265	265	265	265	265	265
7.5°	264	264	264	264	264	264	264	264	264	264	264
10°	263	263	263	263	263	263	263	263	263	263	262
12.5°	260	260	260	260	260	259	259	259	259	259	259
15°	256	256	256	256	256	256	256	256	256	255	255
17.5°	254	253	254	253	253	253	253	253	253	252	252
20°	250	250	250	250	250	250	250	249	249	249	248
22.5°	246	246	246	246	246	245	245	245	244	244	244
25°	241	241	241	241	241	240	240	239	239	239	238
27.5°	236	236	236	236	236	235	235	234	234	233	232
30°	231	231	231	231	231	231	230	229	229	228	227
32.5°	226	226	226	226	226	225	225	224	223	222	221
35°	221	221	221	221	220	220	219	218	217	216	214
37.5°	216	216	216	215	215	214	213	212	211	209	208
40°	212	212	211	211	210	209	208	207	205	204	202
42.5°	208	208	207	206	205	203	202	201	199	197	195
45°	204	204	203	202	200	199	197	196	194	192	189
47.5°	200	200	199	197	196	194	192	190	188	186	183
50°	195	194	193	192	191	189	187	185	183	180	177
52.5°	181	180	180	179	179	177	176	175	173	170	167
55°	157	157	157	157	157	157	156	155	153	151	148
57.5°	132	131	132	132	132	132	132	131	131	129	128
60°	111	111	111	111	111	111	111	111	111	111	111
62.5°	92	92	93	93	93	93	93	94	94	94	95
65°	76	76	76	76	77	77	77	78	78	79	80
67.5°	59	60	60	60	61	61	61	62	62	63	64
70°	45	45	45	45	46	46	47	47	47	48	48
72.5°	33	32	33	33	33	33	34	34	34	34	34
75°	23	22	23	23	23	23	23	24	24	24	24
77.5°	15	15	15	15	16	16	16	16	16	16	16
80°	10	10	10	10	10	11	11	11	11	11	11
82.5°	7	7	7	7	7	7	7	7	7	7	7
85°	4	4	4	4	4	4	4	4	4	4	4
87.5°	2	2	2	2	2	2	2	2	2	2	2
90°	0	0	0	0	0	0	0	0	0	0	0



TEST NUMBER: P21160-R2

CATALOG NUMBER: EL405830-TL409WHWW

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	267	267	267	267	267	267	267	267	267	267	267
2.5°	267	267	267	267	267	267	266	266	266	266	266
5°	264	264	264	264	264	264	264	263	263	263	263
7.5°	263	263	263	263	263	263	263	262	262	262	262
10°	262	262	262	262	262	261	261	261	261	260	260
12.5°	259	259	258	258	258	258	257	257	257	256	256
15°	255	255	254	254	254	253	253	253	252	252	251
17.5°	252	252	251	251	250	250	249	249	248	247	247
20°	248	248	247	246	246	245	244	243	243	242	241
22.5°	243	242	242	241	240	239	238	237	235	234	233
25°	237	236	235	234	233	232	230	229	227	225	224
27.5°	231	230	229	228	226	225	223	221	218	216	214
30°	226	225	223	221	220	217	215	212	209	206	202
32.5°	220	218	216	214	212	209	205	202	198	193	189
35°	213	211	208	206	202	199	195	190	185	179	173
37.5°	205	203	200	197	192	188	181	177	170	163	156
40°	199	196	192	187	182	176	170	163	155	146	137
42.5°	192	188	183	177	170	163	155	147	138	128	118
45°	185	180	174	166	157	148	139	130	120	110	99
47.5°	179	173	165	155	144	133	122	112	102	92	82
50°	172	165	156	144	130	117	105	94	84	75	67
52.5°	162	154	143	130	115	100	87	77	68	61	54
55°	143	136	125	112	96	81	69	60	54	49	44
57.5°	125	119	109	96	80	66	55	48	42	39	37
60°	109	104	95	83	68	55	45	39	35	33	31
62.5°	94	91	83	72	59	47	38	33	30	28	28
65°	80	78	71	62	50	40	33	29	26	25	25
67.5°	64	62	58	50	41	33	28	25	23	23	22
70°	48	48	44	39	33	27	23	21	20	20	20
72.5°	34	34	32	29	25	22	19	18	17	17	17
75°	24	23	22	21	19	17	15	14	14	14	14
77.5°	16	16	15	15	14	13	12	11	11	11	11
80°	11	11	10	10	10	9	9	8	8	8	8
82.5°	7	7	7	7	6	6	6	6	6	6	6
85°	4	4	4	4	4	4	4	4	4	3	3
87.5°	2	2	2	2	1	1	1	1	1	1	1
90°	0	0	0	0	0	0	0	0	0	0	0



TEST NUMBER: P21160-R2

CATALOG NUMBER: EL405830-TL409WHWW

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	267	267	267	267	267	267	267	267	267	267	267
2.5°	266	265	265	265	265	265	265	265	265	264	264
5°	263	263	262	262	262	262	262	262	262	262	262
7.5°	262	261	261	261	261	261	261	261	261	260	260
10°	260	260	260	259	259	259	259	259	259	259	258
12.5°	256	256	255	255	255	255	255	254	254	254	254
15°	251	251	250	250	250	249	249	249	249	249	249
17.5°	246	246	245	245	244	244	244	244	243	243	243
20°	240	239	239	238	238	237	237	237	236	237	236
22.5°	232	231	230	229	229	228	228	228	227	227	227
25°	222	221	220	219	218	217	217	217	216	216	216
27.5°	211	209	208	207	206	205	204	204	204	203	203
30°	199	197	194	193	192	191	190	190	189	189	189
32.5°	185	181	178	176	175	174	173	173	172	172	172
35°	168	163	160	157	155	154	154	153	153	153	153
37.5°	149	143	139	136	134	133	132	132	132	131	131
40°	129	122	117	114	112	111	110	110	110	110	110
42.5°	109	101	96	93	91	90	89	89	89	89	89
45°	90	82	77	74	72	72	71	71	71	71	71
47.5°	73	66	62	59	58	57	57	57	57	57	57
50°	59	54	51	49	48	47	47	47	46	46	46
52.5°	49	45	43	41	41	40	40	40	40	40	40
55°	41	39	37	36	36	35	35	35	35	35	35
57.5°	35	34	33	32	32	32	32	32	32	32	32
60°	30	30	30	30	30	29	29	29	29	29	29
62.5°	27	27	27	27	27	27	27	27	27	27	27
65°	25	25	25	25	25	25	25	25	25	25	24
67.5°	22	22	23	23	23	22	22	22	22	22	22
70°	20	20	20	20	20	19	19	19	19	19	19
72.5°	17	17	17	17	17	16	16	16	16	16	16
75°	14	14	14	14	14	13	13	13	13	13	13
77.5°	11	11	11	11	11	11	11	10	10	10	10
80°	8	8	8	8	8	8	8	8	8	8	8
82.5°	6	6	6	6	6	5	5	5	5	5	5
85°	3	3	3	3	3	3	3	3	3	3	3
87.5°	1	1	1	1	1	1	1	1	1	1	1
90°	0	0	0	0	0	0	0	0	0	0	0



TEST NUMBER: P21160-R2

CATALOG NUMBER: EL405830-TL409WHWW

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	267	267	267	267
2.5°	264	264	264	264
5°	262	261	261	261
7.5°	260	260	260	260
10°	258	258	258	258
12.5°	254	254	254	254
15°	249	249	249	249
17.5°	243	243	243	243
20°	236	236	236	236
22.5°	227	227	227	227
25°	216	216	216	216
27.5°	203	203	203	203
30°	189	189	189	189
32.5°	172	172	172	172
35°	153	153	153	153
37.5°	131	131	131	131
40°	110	110	110	110
42.5°	89	89	89	89
45°	71	71	71	71
47.5°	57	57	56	56
50°	46	46	46	46
52.5°	39	39	39	39
55°	35	35	35	35
57.5°	32	31	31	31
60°	29	29	29	29
62.5°	27	27	26	26
65°	24	24	24	24
67.5°	22	22	22	22
70°	19	19	19	19
72.5°	16	16	16	16
75°	13	13	13	13
77.5°	10	10	10	10
80°	8	8	8	8
82.5°	5	5	5	5
85°	3	3	3	3
87.5°	1	1	1	1
90°	0	0	0	0

(END OF REPORT)