

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: P123728

Luminaire Tested: **EL406940-TL409WHWW**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P123728  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P13990)  
Test Lab: INNOVATION CENTER-P1  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: EL406940-TL409WHWW  
Description: HALO 4-INCH RECESSED LED DOWNLIGHT  
WALL-WASH WITH WHITE REFLECTOR AND WHITE TRIM RING  
Light Source: (1)SURFACE MOUNT LED, 4000K CCT, 90CRI  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 790.0 lumens  
Efficiency: N/A  
Efficacy: 60.8 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 1.16 / 1.2  
Luminous Opening: Circular (Dia: 0.29' x H: 0')  
CIE Type: Direct

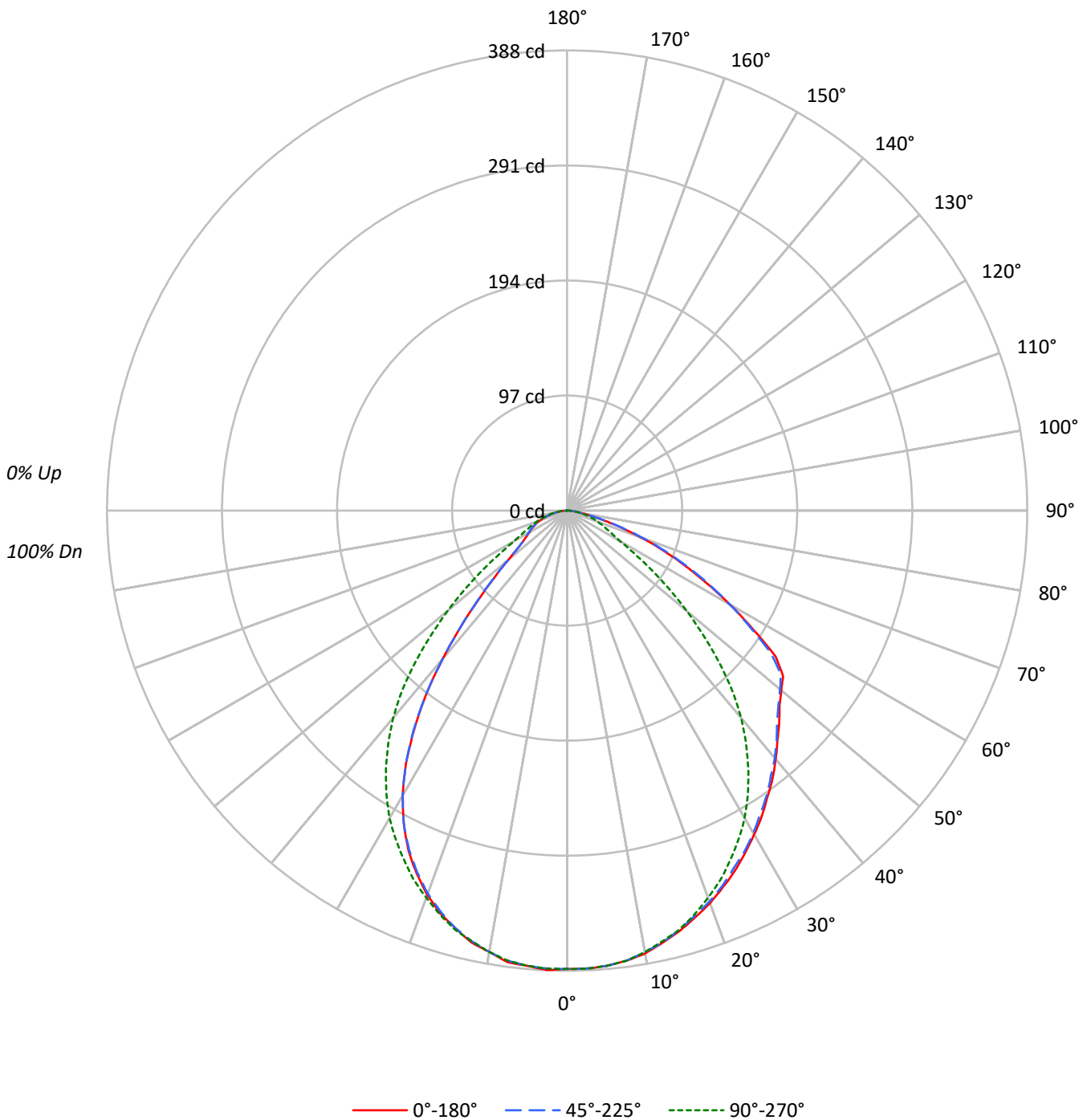
Input Watts (W): 13  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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	100	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	85	77	72	92	83	76	71	80	75	70	78	73	69	75	71	68	66
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59	57
5	80	69	61	55	78	68	60	54	66	59	54	64	58	53	62	57	53	51
6	75	62	54	48	73	62	54	48	60	53	48	58	52	47	57	51	47	45
7	70	57	49	43	68	56	49	43	55	48	43	53	47	43	52	47	42	41
8	65	52	45	39	64	52	44	39	51	44	39	49	43	39	48	43	38	37
9	61	48	41	36	60	48	41	36	47	40	35	46	40	35	45	39	35	33
10	57	45	38	33	56	44	37	33	43	37	32	43	37	32	42	36	32	30

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

	0°	90°	180°
0°	62267	62267	62267
5°	62310	62310	62310
10°	62033	61820	61820
15°	61194	60994	60777
20°	60382	59542	59114
25°	59549	57807	56278
30°	58673	55696	51585
35°	57920	52374	44172
40°	57540	47992	34322
45°	57597	41375	23763
50°	59049	32908	16291
55°	60304	24127	12752
60°	51005	16594	11857
65°	41627	14028	11703
70°	31230	12718	11540
75°	19856	11453	10706
80°	11411	10205	9092
85°	9057	9057	6839



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	36.6	4.6
10°-20°	102.9	13.0
20°-30°	149.2	18.9
30°-40°	162.3	20.5
40°-50°	138.4	17.5
50°-60°	104.9	13.3
60°-70°	63.8	8.1
70°-80°	26.5	3.4
80°-90°	5.5	0.7
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°	288.6	36.5
0°-40°	450.8	57.1
0°-60°	694.2	87.9
0°-90°	790.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	790.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	386	386	386	386	386	
5°	385	385	385	385	385	37
15°	367	366	366	364	364	103
25°	335	332	325	315	317	154
35°	294	293	266	226	225	185
45°	253	250	182	106	104	196
55°	215	210	86	45	45	185
65°	109	112	37	32	31	109
75°	32	33	18	17	17	36
85°	5	5	5	4	4	6
90°	0	0	0	0	0	



TEST NUMBER: P123728

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5
2.5°	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5
5°	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3
7.5°	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8
10°	379.2	379.2	379.2	377.9	379.2	379.2	377.9	377.9	377.9	377.9	377.9
12.5°	373.0	373.0	373.0	373.0	373.0	373.0	373.0	373.0	373.0	373.0	373.0
15°	366.9	366.9	366.9	366.9	366.9	366.9	365.7	366.9	365.7	365.7	365.7
17.5°	359.5	359.5	359.5	359.5	359.5	359.5	359.5	359.5	359.5	358.3	358.3
20°	352.2	352.2	352.2	352.2	352.2	352.2	350.9	350.9	350.9	350.9	350.9
22.5°	343.6	343.6	343.6	343.6	343.6	343.6	342.4	343.6	342.4	342.4	342.4
25°	335.0	333.8	333.8	333.8	335.0	335.0	333.8	333.8	333.8	332.5	332.5
27.5°	325.2	325.2	325.2	325.2	325.2	325.2	323.9	323.9	323.9	323.9	322.7
30°	315.4	315.4	315.4	315.4	315.4	315.4	315.4	315.4	314.1	314.1	312.9
32.5°	305.5	304.3	304.3	304.3	305.5	305.5	304.3	304.3	304.3	303.1	301.9
35°	294.5	294.5	294.5	294.5	294.5	294.5	294.5	294.5	294.5	293.3	292.0
37.5°	284.7	283.5	283.5	283.5	284.7	284.7	284.7	284.7	283.5	282.2	282.2
40°	273.6	273.6	273.6	273.6	273.6	273.6	273.6	273.6	272.4	272.4	270.0
42.5°	262.6	262.6	262.6	262.6	263.8	263.8	263.8	263.8	262.6	261.4	258.9
45°	252.8	252.8	252.8	252.8	254.0	254.0	254.0	252.8	252.8	250.3	247.9
47.5°	243.0	243.0	243.0	244.2	244.2	244.2	244.2	244.2	243.0	241.7	238.1
50°	235.6	235.6	235.6	235.6	236.8	238.1	236.8	236.8	235.6	234.4	230.7
52.5°	229.5	229.5	229.5	230.7	230.7	230.7	230.7	230.7	229.5	227.0	223.3
55°	214.7	214.7	214.7	214.7	214.7	216.0	214.7	214.7	212.3	209.8	206.1
57.5°	185.3	185.3	185.3	185.3	186.5	186.5	186.5	186.5	185.3	182.8	180.4
60°	158.3	158.3	158.3	158.3	159.5	159.5	158.3	158.3	158.3	158.3	157.1
62.5°	132.5	132.5	132.5	132.5	132.5	133.8	133.8	133.8	135.0	135.0	133.8
65°	109.2	109.2	109.2	109.2	109.2	110.4	110.4	110.4	111.7	111.7	112.9
67.5°	87.1	87.1	87.1	87.1	87.1	87.1	88.3	88.3	89.6	89.6	90.8
70°	66.3	66.3	66.3	66.3	66.3	66.3	66.3	66.3	67.5	68.7	68.7
72.5°	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9	49.1	49.1
75°	31.9	31.9	31.9	31.9	31.9	31.9	33.1	33.1	33.1	33.1	33.1
77.5°	19.6	19.6	19.6	19.6	20.9	20.9	20.9	20.9	20.9	20.9	20.9
80°	12.3	12.3	12.3	12.3	12.3	12.3	13.5	13.5	13.5	12.3	13.5
82.5°	7.4	7.4	8.6	7.4	8.6	8.6	8.6	8.6	8.6	8.6	8.6
85°	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
87.5°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
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):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5
2.5°	386.5	386.5	386.5	386.5	387.8	386.5	386.5	386.5	386.5	386.5	387.8
5°	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3
7.5°	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8
10°	379.2	377.9	377.9	377.9	379.2	377.9	377.9	377.9	377.9	377.9	377.9
12.5°	373.0	373.0	373.0	373.0	373.0	373.0	373.0	371.8	371.8	371.8	371.8
15°	365.7	365.7	365.7	365.7	365.7	365.7	365.7	365.7	364.4	364.4	364.4
17.5°	358.3	358.3	358.3	358.3	358.3	357.1	357.1	357.1	357.1	355.9	355.9
20°	350.9	350.9	349.7	349.7	349.7	348.5	348.5	347.3	347.3	346.0	346.0
22.5°	342.4	341.1	341.1	339.9	339.9	338.7	337.4	337.4	336.2	335.0	333.8
25°	332.5	331.3	331.3	330.1	328.9	327.6	327.6	325.2	323.9	322.7	321.5
27.5°	322.7	322.7	321.5	319.0	317.8	316.6	314.1	312.9	310.5	308.0	305.5
30°	312.9	311.7	310.5	308.0	306.8	304.3	301.9	299.4	295.7	292.0	288.4
32.5°	301.9	300.6	298.2	295.7	293.3	290.8	287.1	283.5	278.5	273.6	268.7
35°	290.8	289.6	287.1	283.5	279.8	276.1	272.4	266.3	260.1	254.0	246.6
37.5°	279.8	277.3	273.6	270.0	266.3	260.1	255.2	247.9	240.5	231.9	222.1
40°	267.5	265.0	260.1	255.2	249.1	243.0	236.8	228.2	218.4	207.4	196.3
42.5°	256.5	251.6	246.6	240.5	233.1	224.6	216.0	206.1	193.9	181.6	169.3
45°	245.4	239.3	231.9	223.3	213.5	203.7	192.7	181.6	169.3	155.8	142.3
47.5°	234.4	227.0	218.4	206.1	193.9	181.6	169.3	155.8	142.3	130.1	116.6
50°	225.8	217.2	204.9	191.4	174.2	159.5	144.8	131.3	117.8	105.5	93.3
52.5°	217.2	207.4	193.9	175.5	157.1	138.7	121.5	108.0	95.7	84.7	74.9
55°	200.0	190.2	175.5	155.8	136.2	116.6	99.4	85.9	76.1	67.5	60.1
57.5°	175.5	166.9	152.2	132.5	112.9	93.3	78.5	66.3	57.7	52.8	47.9
60°	153.4	146.0	132.5	114.1	94.5	76.1	61.4	51.5	45.4	41.7	40.5
62.5°	132.5	126.4	114.1	98.2	81.0	63.8	50.3	42.9	38.0	36.8	34.4
65°	111.7	106.8	98.2	83.4	68.7	54.0	42.9	36.8	33.1	31.9	30.7
67.5°	90.8	88.3	79.8	68.7	56.4	45.4	36.8	31.9	29.4	28.2	28.2
70°	68.7	67.5	62.6	54.0	45.4	36.8	30.7	27.0	25.8	25.8	25.8
72.5°	50.3	49.1	46.6	40.5	34.4	29.4	24.5	23.3	22.1	22.1	22.1
75°	34.4	34.4	31.9	29.4	25.8	22.1	19.6	18.4	18.4	18.4	18.4
77.5°	20.9	22.1	20.9	19.6	18.4	16.0	14.7	14.7	14.7	14.7	14.7
80°	13.5	13.5	13.5	13.5	12.3	11.0	11.0	11.0	11.0	11.0	11.0
82.5°	8.6	8.6	8.6	8.6	8.6	8.6	7.4	7.4	7.4	7.4	7.4
85°	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
87.5°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	1.2	1.2	1.2
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):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5
2.5°	387.8	386.5	386.5	386.5	386.5	386.5	386.5	386.5	386.5	387.8	386.5
5°	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3	385.3
7.5°	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8	382.8	381.6
10°	377.9	377.9	377.9	377.9	377.9	377.9	377.9	377.9	377.9	377.9	377.9
12.5°	373.0	371.8	371.8	371.8	371.8	371.8	371.8	371.8	371.8	371.8	371.8
15°	364.4	364.4	364.4	364.4	364.4	364.4	364.4	364.4	364.4	364.4	364.4
17.5°	355.9	355.9	355.9	354.6	354.6	354.6	354.6	354.6	354.6	354.6	354.6
20°	344.8	344.8	344.8	343.6	343.6	343.6	343.6	344.8	343.6	343.6	343.6
22.5°	333.8	332.5	331.3	331.3	331.3	330.1	330.1	331.3	330.1	331.3	330.1
25°	320.3	317.8	316.6	316.6	315.4	315.4	315.4	315.4	315.4	315.4	315.4
27.5°	304.3	301.9	300.6	299.4	298.2	298.2	297.0	297.0	297.0	297.0	297.0
30°	285.9	283.5	281.0	278.5	278.5	277.3	277.3	276.1	276.1	277.3	276.1
32.5°	265.0	260.1	257.7	255.2	254.0	252.8	252.8	251.6	252.8	252.8	251.6
35°	241.7	235.6	231.9	228.2	227.0	225.8	225.8	224.6	224.6	224.6	224.6
37.5°	214.7	207.4	201.2	198.8	196.3	195.1	193.9	193.9	193.9	193.9	193.9
40°	185.3	176.7	170.6	166.9	164.4	163.2	163.2	162.0	162.0	162.0	162.0
42.5°	157.1	147.2	139.9	136.2	133.8	132.5	132.5	131.3	131.3	131.3	131.3
45°	130.1	119.0	111.7	108.0	106.8	105.5	104.3	104.3	104.3	104.3	104.3
47.5°	105.5	95.7	88.3	84.7	83.4	82.2	82.2	82.2	82.2	82.2	82.2
50°	83.4	76.1	69.9	67.5	66.3	65.0	65.0	65.0	65.0	65.0	65.0
52.5°	66.3	60.1	56.4	55.2	54.0	52.8	52.8	52.8	52.8	52.8	52.8
55°	54.0	50.3	47.9	46.6	45.4	45.4	45.4	45.4	45.4	45.4	45.4
57.5°	45.4	42.9	41.7	41.7	40.5	40.5	40.5	40.5	40.5	40.5	40.5
60°	39.3	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	36.8
62.5°	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4
65°	30.7	31.9	31.9	31.9	31.9	31.9	31.9	31.9	31.9	30.7	30.7
67.5°	28.2	28.2	29.4	29.4	29.4	28.2	28.2	28.2	28.2	28.2	28.2
70°	25.8	25.8	25.8	25.8	25.8	25.8	24.5	24.5	24.5	24.5	24.5
72.5°	22.1	22.1	22.1	22.1	22.1	20.9	20.9	20.9	20.9	20.9	20.9
75°	18.4	18.4	18.4	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
77.5°	14.7	14.7	14.7	14.7	13.5	13.5	13.5	13.5	13.5	13.5	13.5
80°	11.0	11.0	11.0	11.0	9.8	9.8	9.8	9.8	9.8	9.8	9.8
82.5°	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
85°	4.9	4.9	3.7	4.9	4.9	3.7	3.7	3.7	3.7	3.7	3.7
87.5°	2.5	2.5	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
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: EL406940-TL409WHWW

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	386.5	386.5	386.5	386.5
2.5°	386.5	386.5	386.5	387.8
5°	385.3	385.3	385.3	385.3
7.5°	381.6	381.6	381.6	384.1
10°	377.9	377.9	377.9	377.9
12.5°	371.8	371.8	371.8	373.0
15°	364.4	364.4	364.4	364.4
17.5°	354.6	354.6	355.9	355.9
20°	343.6	343.6	344.8	344.8
22.5°	330.1	331.3	331.3	331.3
25°	315.4	315.4	315.4	316.6
27.5°	297.0	298.2	298.2	298.2
30°	276.1	276.1	277.3	277.3
32.5°	251.6	252.8	252.8	252.8
35°	224.6	225.8	225.8	224.6
37.5°	193.9	193.9	195.1	195.1
40°	162.0	162.0	163.2	163.2
42.5°	131.3	131.3	132.5	132.5
45°	104.3	104.3	104.3	104.3
47.5°	82.2	82.2	82.2	82.2
50°	65.0	65.0	65.0	65.0
52.5°	52.8	52.8	52.8	52.8
55°	45.4	45.4	45.4	45.4
57.5°	40.5	40.5	40.5	40.5
60°	36.8	36.8	36.8	36.8
62.5°	34.4	34.4	34.4	34.4
65°	30.7	30.7	30.7	30.7
67.5°	28.2	28.2	28.2	28.2
70°	24.5	24.5	24.5	24.5
72.5°	20.9	20.9	20.9	20.9
75°	17.2	17.2	17.2	17.2
77.5°	13.5	13.5	13.5	13.5
80°	9.8	9.8	9.8	9.8
82.5°	7.4	7.4	7.4	7.4
85°	3.7	3.7	3.7	3.7
87.5°	1.2	1.2	1.2	1.2
90°	0.0	0.0	0.0	0.0

(END OF REPORT)