

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: P123730

Luminaire Tested: **EL406930-TL409WW**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P123730
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P13991)
Test Lab: INNOVATION CENTER-P1
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: EL406930-TL409WW
Description: HALO 4-INCH RECESSED LED DOWNLIGHT
WALL-WASH WITH SEMI-SPECULAR REFLECTOR AND WHITE TRIM RING
Light Source: (1)SURFACE MOUNT LED, 3000K CCT, 90CRI
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 700.0 lumens
Efficiency: N/A
Efficacy: 53.8 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.24 / 1.22
Luminous Opening: Circular (Dia: 0.29' x H: 0')
CIE Type: Direct

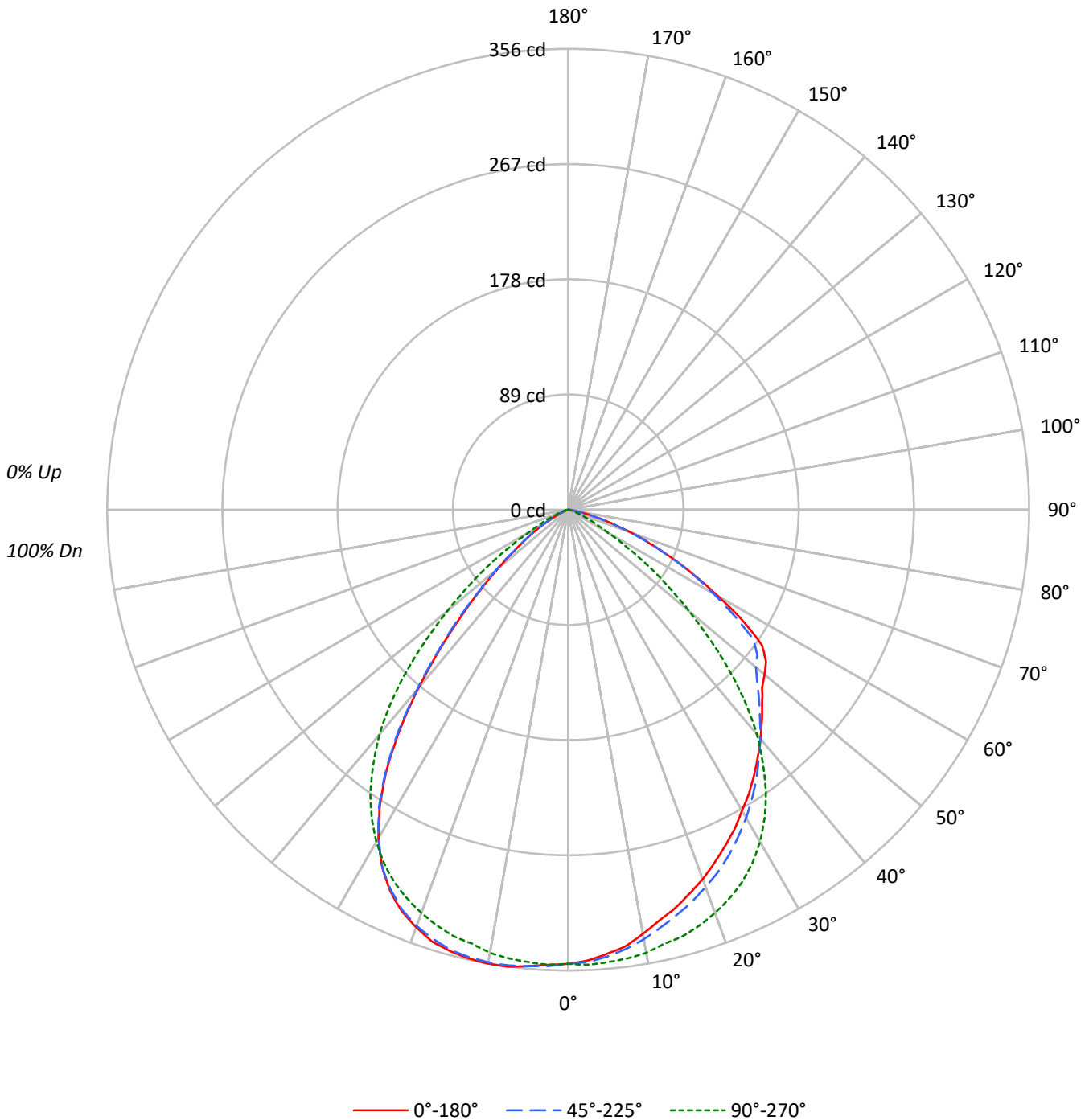
Input Watts (W): 13
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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CATALOG NUMBER: EL406930-TL409WW

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	108	104	101	109	105	102	100	101	99	96	97	95	94	94	92	91	89
2	103	96	91	86	101	95	90	85	91	87	83	88	85	81	85	82	80	78
3	95	87	80	74	93	85	79	74	82	77	72	80	75	71	77	73	70	68
4	88	78	71	65	86	77	70	64	74	68	64	72	67	63	70	66	62	60
5	82	71	63	57	80	70	62	57	68	61	56	66	60	56	64	59	55	53
6	76	64	57	51	75	64	56	51	62	55	50	60	54	50	59	54	49	48
7	71	59	51	46	70	58	51	46	57	50	45	55	49	45	54	49	45	43
8	67	54	47	41	65	54	46	41	52	46	41	51	45	41	50	45	40	39
9	62	50	43	38	61	50	42	37	48	42	37	47	41	37	46	41	37	35
10	59	46	39	34	57	46	39	34	45	39	34	44	38	34	43	38	34	32

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	56515	56515	56515
5°	55696	56731	57249
10°	54410	56864	58254
15°	53155	56908	58859
20°	52067	56833	58856
25°	50946	56456	57789
30°	49930	55101	54506
35°	49227	52374	47948
40°	48581	47676	37792
45°	48255	40213	26793
50°	49600	30552	17695
55°	51372	21038	11123
60°	43079	11374	6219
65°	33851	6519	2859
70°	24164	3533	1507
75°	13321	1992	685
80°	5938	1021	0
85°	3882	0	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	33.3	4.8
10°-20°	95.4	13.6
20°-30°	142.4	20.3
30°-40°	156.6	22.4
40°-50°	129.1	18.4
50°-60°	88.4	12.6
60°-70°	42.1	6.0
70°-80°	11.5	1.6
80°-90°	1.2	0.2
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°	271.1	38.7
0°-40°	427.7	61.1
0°-60°	645.2	92.2
0°-90°	700.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	700.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	351	351	351	351	351	
5°	344	346	351	354	354	33
15°	319	324	341	352	353	90
25°	287	294	318	324	325	132
35°	250	254	266	245	244	157
45°	212	208	176	121	118	164
55°	183	174	75	41	40	157
65°	89	88	17	9	8	89
75°	21	21	3	1	1	26
85°	2	2	0	0	0	3
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8
2.5°	348.6	348.6	348.6	348.6	348.6	348.6	348.6	348.6	347.6	349.7	349.7
5°	344.4	343.3	344.4	344.4	344.4	344.4	344.4	344.4	345.4	346.5	346.5
7.5°	340.1	339.0	339.0	339.0	339.0	341.2	340.1	341.2	341.2	342.2	342.2
10°	332.6	332.6	332.6	332.6	333.7	333.7	333.7	334.7	335.8	336.9	336.9
12.5°	325.1	325.1	325.1	325.1	326.2	327.3	327.3	328.3	329.4	330.5	331.5
15°	318.7	318.7	318.7	318.7	318.7	319.8	320.8	321.9	323.0	324.1	325.1
17.5°	311.2	311.2	311.2	312.3	312.3	312.3	313.4	314.4	315.5	317.6	318.7
20°	303.7	303.7	303.7	303.7	304.8	304.8	305.9	306.9	309.1	310.1	312.3
22.5°	295.2	295.2	295.2	295.2	296.2	297.3	297.3	299.5	300.5	302.7	304.8
25°	286.6	286.6	286.6	286.6	287.7	287.7	288.8	289.8	292.0	294.1	296.2
27.5°	278.1	278.1	278.1	278.1	278.1	279.1	280.2	281.3	282.3	284.5	285.6
30°	268.4	268.4	269.5	269.5	269.5	270.6	270.6	271.6	272.7	274.9	275.9
32.5°	259.9	259.9	259.9	258.8	259.9	259.9	261.0	262.0	262.0	264.2	265.2
35°	250.3	250.3	250.3	250.3	250.3	250.3	250.3	250.3	252.4	253.5	254.5
37.5°	240.6	239.6	240.6	239.6	239.6	240.6	239.6	240.6	241.7	241.7	242.8
40°	231.0	231.0	231.0	229.9	229.9	229.9	229.9	231.0	229.9	231.0	231.0
42.5°	221.4	221.4	220.3	220.3	220.3	220.3	219.2	219.2	219.2	219.2	219.2
45°	211.8	211.8	211.8	210.7	210.7	209.6	209.6	208.5	208.5	208.5	206.4
47.5°	203.2	203.2	203.2	202.1	201.1	200.0	200.0	198.9	197.9	197.9	195.7
50°	197.9	196.8	196.8	195.7	194.6	193.6	192.5	192.5	190.4	189.3	187.2
52.5°	192.5	192.5	191.4	190.4	189.3	188.2	187.2	186.1	186.1	184.0	180.7
55°	182.9	182.9	181.8	179.7	178.6	177.5	177.5	176.5	176.5	174.3	171.1
57.5°	160.4	160.4	159.4	158.3	157.2	156.1	155.1	154.0	154.0	151.9	149.7
60°	133.7	133.7	132.6	131.5	131.5	130.5	130.5	130.5	129.4	129.4	127.3
62.5°	110.2	110.2	110.2	109.1	109.1	108.0	108.0	108.0	109.1	109.1	108.0
65°	88.8	88.8	88.8	88.8	87.7	87.7	87.7	87.7	88.8	87.7	87.7
67.5°	68.4	68.4	68.4	68.4	67.4	67.4	67.4	67.4	68.4	68.4	68.4
70°	51.3	50.3	51.3	50.3	50.3	50.3	50.3	50.3	50.3	50.3	50.3
72.5°	35.3	34.2	35.3	35.3	35.3	35.3	35.3	34.2	34.2	34.2	34.2
75°	21.4	22.5	22.5	22.5	22.5	22.5	22.5	22.5	21.4	21.4	21.4
77.5°	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	11.8
80°	6.4	7.5	7.5	7.5	7.5	7.5	7.5	7.5	6.4	6.4	6.4
82.5°	3.2	3.2	3.2	4.3	4.3	4.3	3.2	3.2	3.2	3.2	3.2
85°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	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



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8
2.5°	349.7	349.7	349.7	350.8	350.8	350.8	351.9	351.9	351.9	351.9	351.9
5°	346.5	346.5	347.6	348.6	348.6	349.7	350.8	350.8	350.8	350.8	351.9
7.5°	343.3	344.4	344.4	346.5	346.5	347.6	348.6	349.7	349.7	350.8	351.9
10°	338.0	340.1	341.2	342.2	343.3	345.4	346.5	347.6	348.6	349.7	350.8
12.5°	332.6	333.7	335.8	338.0	339.0	341.2	342.2	343.3	345.4	346.5	347.6
15°	327.3	328.3	331.5	333.7	334.7	336.9	339.0	341.2	342.2	343.3	345.4
17.5°	320.8	323.0	325.1	328.3	330.5	332.6	334.7	336.9	339.0	340.1	341.2
20°	314.4	316.6	319.8	321.9	324.1	327.3	329.4	331.5	333.7	334.7	336.9
22.5°	305.9	309.1	311.2	315.5	317.6	320.8	323.0	325.1	327.3	328.3	329.4
25°	297.3	300.5	303.7	306.9	309.1	312.3	315.5	317.6	318.7	319.8	320.8
27.5°	288.8	290.9	294.1	297.3	300.5	303.7	305.9	308.0	309.1	310.1	310.1
30°	278.1	281.3	284.5	287.7	289.8	293.0	295.2	296.2	296.2	297.3	296.2
32.5°	267.4	269.5	272.7	275.9	278.1	280.2	282.3	282.3	282.3	281.3	279.1
35°	256.7	257.7	259.9	262.0	264.2	265.2	266.3	266.3	264.2	261.0	257.7
37.5°	243.8	244.9	247.0	248.1	249.2	249.2	249.2	247.0	243.8	239.6	233.1
40°	232.1	232.1	232.1	233.1	232.1	231.0	229.9	226.7	220.3	213.9	206.4
42.5°	218.2	218.2	217.1	216.0	213.9	211.8	207.5	203.2	195.7	187.2	178.6
45°	205.3	203.2	201.1	197.9	193.6	188.2	182.9	176.5	169.0	159.4	149.7
47.5°	192.5	189.3	184.0	178.6	171.1	163.6	157.2	148.7	140.1	130.5	120.9
50°	182.9	177.5	170.0	161.5	150.8	141.2	131.5	121.9	112.3	103.7	95.2
52.5°	176.5	169.0	159.4	146.5	132.6	119.8	106.9	97.3	87.7	80.2	72.7
55°	166.8	158.3	146.5	132.6	115.5	99.5	85.6	74.9	66.3	59.9	53.5
57.5°	145.4	136.9	125.1	109.1	92.0	77.0	63.1	53.5	47.1	41.7	37.4
60°	124.1	116.6	104.8	88.8	72.7	56.7	43.8	35.3	29.9	26.7	24.6
62.5°	104.8	99.5	87.7	73.8	57.8	42.8	32.1	24.6	20.3	17.1	16.0
65°	86.6	81.3	71.7	58.8	46.0	33.2	22.5	17.1	12.8	11.8	10.7
67.5°	67.4	63.1	55.6	46.0	34.2	23.5	16.0	10.7	8.6	7.5	6.4
70°	49.2	47.1	41.7	34.2	25.7	17.1	11.8	7.5	5.3	4.3	4.3
72.5°	34.2	32.1	28.9	23.5	17.1	11.8	7.5	5.3	3.2	3.2	2.1
75°	21.4	20.3	18.2	15.0	10.7	7.5	4.3	3.2	2.1	2.1	2.1
77.5°	11.8	10.7	9.6	8.6	6.4	4.3	3.2	2.1	2.1	1.1	1.1
80°	6.4	5.3	5.3	4.3	3.2	2.1	2.1	1.1	1.1	1.1	1.1
82.5°	3.2	3.2	3.2	2.1	2.1	1.1	1.1	1.1	1.1	1.1	0.0
85°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0
87.5°	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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°	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8	350.8
2.5°	351.9	351.9	351.9	352.9	352.9	352.9	352.9	352.9	351.9	352.9	352.9
5°	352.9	351.9	352.9	354.0	354.0	354.0	355.1	355.1	355.1	355.1	355.1
7.5°	352.9	352.9	352.9	354.0	355.1	355.1	356.1	356.1	356.1	356.1	357.2
10°	351.9	351.9	352.9	354.0	355.1	355.1	355.1	356.1	356.1	356.1	357.2
12.5°	348.6	349.7	350.8	351.9	354.0	354.0	354.0	355.1	355.1	355.1	355.1
15°	345.4	347.6	348.6	349.7	350.8	351.9	351.9	352.9	352.9	352.9	354.0
17.5°	342.2	343.3	344.4	346.5	347.6	347.6	348.6	348.6	348.6	349.7	349.7
20°	338.0	339.0	340.1	341.2	342.2	342.2	343.3	343.3	343.3	343.3	344.4
22.5°	331.5	331.5	332.6	333.7	333.7	334.7	334.7	335.8	335.8	335.8	335.8
25°	321.9	321.9	323.0	323.0	324.1	324.1	324.1	324.1	325.1	325.1	325.1
27.5°	310.1	310.1	310.1	310.1	310.1	311.2	311.2	311.2	311.2	311.2	311.2
30°	295.2	295.2	294.1	294.1	294.1	293.0	293.0	294.1	294.1	293.0	294.1
32.5°	277.0	274.9	272.7	272.7	271.6	271.6	270.6	270.6	270.6	270.6	270.6
35°	254.5	250.3	248.1	246.0	246.0	244.9	243.8	243.8	243.8	243.8	243.8
37.5°	227.8	222.5	219.2	217.1	215.0	215.0	213.9	213.9	213.9	212.8	213.9
40°	198.9	192.5	188.2	185.0	182.9	181.8	181.8	181.8	180.7	180.7	180.7
42.5°	169.0	161.5	156.1	152.9	150.8	149.7	149.7	149.7	148.7	148.7	148.7
45°	140.1	131.5	126.2	123.0	120.9	120.9	119.8	119.8	118.7	118.7	119.8
47.5°	112.3	104.8	99.5	96.3	95.2	94.1	93.0	93.0	93.0	93.0	93.0
50°	87.7	81.3	77.0	74.9	72.7	72.7	71.7	71.7	71.7	71.7	71.7
52.5°	66.3	61.0	57.8	56.7	55.6	54.5	54.5	54.5	54.5	54.5	53.5
55°	49.2	44.9	42.8	41.7	41.7	40.6	40.6	40.6	40.6	40.6	40.6
57.5°	34.2	33.2	31.0	31.0	29.9	29.9	29.9	28.9	28.9	28.9	28.9
60°	23.5	22.5	21.4	21.4	20.3	20.3	20.3	20.3	20.3	19.3	19.3
62.5°	15.0	15.0	15.0	13.9	13.9	13.9	12.8	13.9	12.8	12.8	12.8
65°	9.6	9.6	9.6	8.6	8.6	8.6	8.6	8.6	8.6	7.5	7.5
67.5°	6.4	5.3	5.3	5.3	5.3	4.3	4.3	4.3	4.3	4.3	4.3
70°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	2.1	3.2	2.1	2.1
72.5°	2.1	2.1	2.1	2.1	1.1	1.1	2.1	1.1	1.1	1.1	1.1
75°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
77.5°	1.1	1.1	1.1	1.1	0.0	0.0	0.0	1.1	0.0	0.0	1.1
80°	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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: EL406930-TL409WW

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	350.8	350.8	350.8	350.8
2.5°	352.9	352.9	352.9	351.9
5°	355.1	355.1	355.1	354.0
7.5°	358.3	357.2	357.2	356.1
10°	357.2	357.2	357.2	356.1
12.5°	356.1	356.1	356.1	355.1
15°	355.1	354.0	354.0	352.9
17.5°	350.8	350.8	350.8	349.7
20°	345.4	345.4	345.4	343.3
22.5°	336.9	336.9	336.9	335.8
25°	326.2	326.2	326.2	325.1
27.5°	312.3	312.3	312.3	311.2
30°	294.1	294.1	294.1	293.0
32.5°	271.6	271.6	271.6	270.6
35°	243.8	244.9	244.9	243.8
37.5°	213.9	213.9	213.9	212.8
40°	180.7	180.7	180.7	179.7
42.5°	148.7	148.7	148.7	147.6
45°	118.7	118.7	118.7	117.6
47.5°	92.0	92.0	92.0	92.0
50°	70.6	70.6	70.6	70.6
52.5°	53.5	53.5	53.5	53.5
55°	39.6	39.6	39.6	39.6
57.5°	28.9	28.9	27.8	28.9
60°	19.3	19.3	19.3	19.3
62.5°	12.8	12.8	12.8	12.8
65°	7.5	7.5	7.5	7.5
67.5°	4.3	4.3	4.3	4.3
70°	3.2	2.1	2.1	3.2
72.5°	1.1	1.1	1.1	1.1
75°	1.1	1.1	1.1	1.1
77.5°	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)