

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: P123727

Luminaire Tested: **EL406935-TL409WHWW**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P123727
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: EL406935-TL409WHWW
Description: HALO 4-INCH RECESSED LED DOWNLIGHT
WALL-WASH WITH WHITE REFLECTOR AND WHITE TRIM RING
Light Source: (1)SURFACE MOUNT LED, 3500K CCT, 90CRI
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 720.0 lumens
Efficiency: N/A
Efficacy: 55.4 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

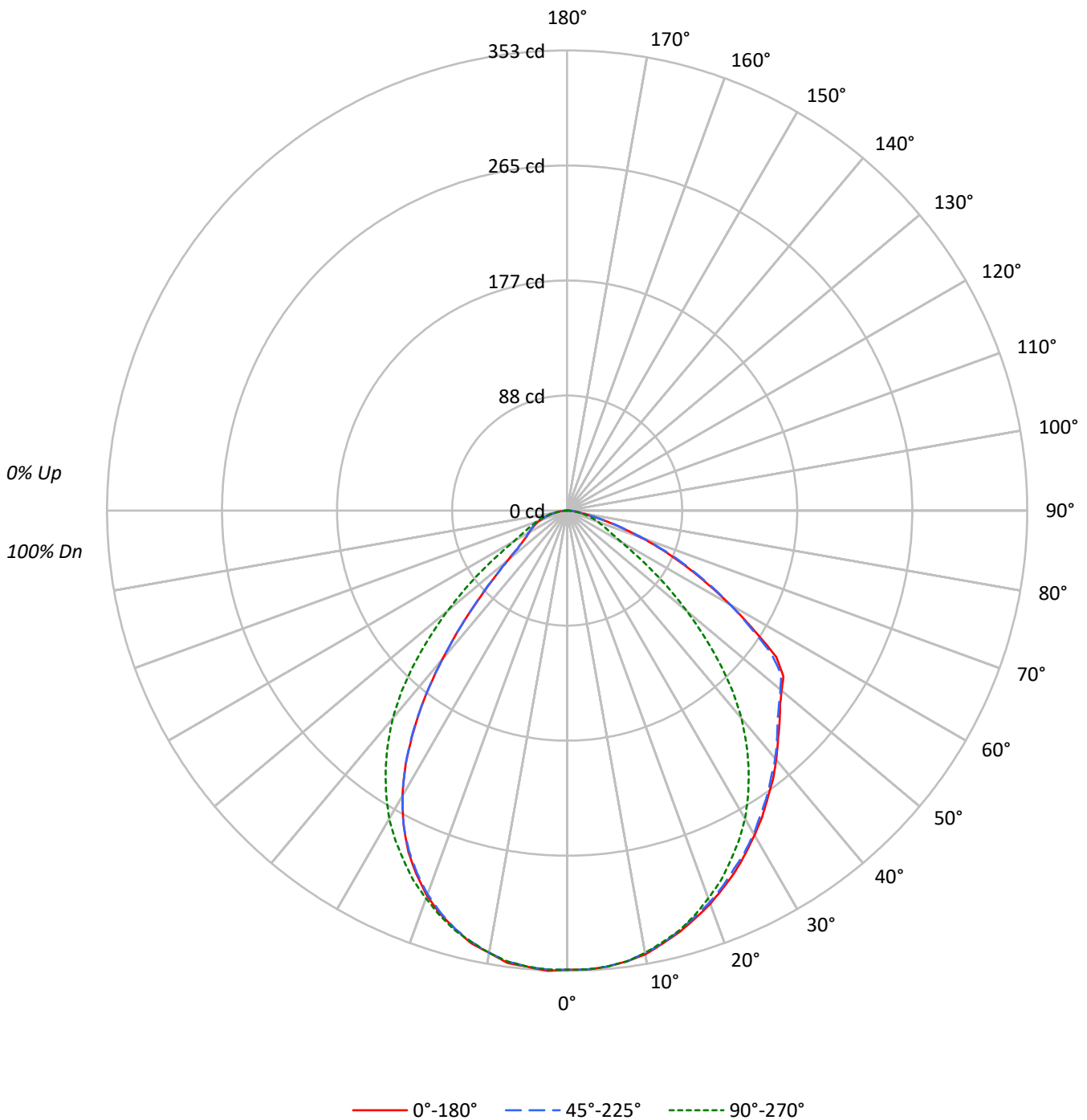
Input Watts (W): 13
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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CATALOG NUMBER: EL406935-TL409WHWW

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	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	53	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°	56757	56757	56757
5°	56796	56796	56796
10°	56536	56356	56356
15°	55774	55590	55390
20°	55033	54262	53885
25°	54270	52688	51283
30°	53464	50767	47009
35°	52787	47732	40259
40°	52450	43744	31273
45°	52493	37707	21667
50°	53811	30001	14863
55°	54967	21993	11628
60°	46495	15144	10826
65°	37930	12808	10674
70°	28451	11587	10551
75°	18114	10457	9773
80°	10391	9370	8257
85°	8318	8318	6285



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	33.3	4.6
10°-20°	93.7	13.0
20°-30°	135.9	18.9
30°-40°	147.9	20.5
40°-50°	126.2	17.5
50°-60°	95.6	13.3
60°-70°	58.2	8.1
70°-80°	24.2	3.4
80°-90°	5.0	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°	263.0	36.5
0°-40°	410.9	57.1
0°-60°	632.7	87.9
0°-90°	720.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	720.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	352	352	352	352	352	
5°	351	351	351	351	351	33
15°	334	333	333	332	332	94
25°	305	303	296	287	288	141
35°	268	267	243	206	205	168
45°	230	228	166	96	95	178
55°	196	191	78	41	41	168
65°	100	102	34	29	28	99
75°	29	30	17	16	16	33
85°	4	4	4	3	3	5
90°	0	0	0	0	0	



TEST NUMBER: P123727

CATALOG NUMBER: EL406935-TL409WHWW

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3
2.5°	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3
5°	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2
7.5°	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9
10°	345.6	345.6	345.6	344.5	345.6	345.6	344.5	344.5	344.5	344.5	344.5
12.5°	340.0	340.0	340.0	340.0	340.0	340.0	340.0	340.0	340.0	340.0	340.0
15°	334.4	334.4	334.4	334.4	334.4	334.4	333.3	334.4	333.3	333.3	333.3
17.5°	327.7	327.7	327.7	327.7	327.7	327.7	327.7	327.7	327.7	326.6	326.6
20°	321.0	321.0	321.0	321.0	321.0	321.0	319.8	319.8	319.8	319.8	319.8
22.5°	313.1	313.1	313.1	313.1	313.1	313.1	312.0	313.1	312.0	312.0	312.0
25°	305.3	304.2	304.2	304.2	305.3	305.3	304.2	304.2	304.2	303.1	303.1
27.5°	296.4	296.4	296.4	296.4	296.4	296.4	295.2	295.2	295.2	295.2	294.1
30°	287.4	287.4	287.4	287.4	287.4	287.4	287.4	287.4	286.3	286.3	285.2
32.5°	278.5	277.4	277.4	277.4	278.5	278.5	277.4	277.4	277.4	276.2	275.1
35°	268.4	268.4	268.4	268.4	268.4	268.4	268.4	268.4	268.4	267.3	266.2
37.5°	259.5	258.3	258.3	258.3	259.5	259.5	259.5	259.5	258.3	257.2	257.2
40°	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	248.3	248.3	246.0
42.5°	239.3	239.3	239.3	239.3	240.4	240.4	240.4	240.4	239.3	238.2	236.0
45°	230.4	230.4	230.4	230.4	231.5	231.5	231.5	230.4	230.4	228.1	225.9
47.5°	221.4	221.4	221.4	222.6	222.6	222.6	222.6	222.6	221.4	220.3	217.0
50°	214.7	214.7	214.7	214.7	215.8	217.0	215.8	215.8	214.7	213.6	210.2
52.5°	209.1	209.1	209.1	210.2	210.2	210.2	210.2	210.2	209.1	206.9	203.5
55°	195.7	195.7	195.7	195.7	195.7	196.8	195.7	195.7	193.5	191.2	187.9
57.5°	168.9	168.9	168.9	168.9	170.0	170.0	170.0	170.0	168.9	166.6	164.4
60°	144.3	144.3	144.3	144.3	145.4	145.4	144.3	144.3	144.3	144.3	143.1
62.5°	120.8	120.8	120.8	120.8	120.8	121.9	121.9	121.9	123.0	123.0	121.9
65°	99.5	99.5	99.5	99.5	99.5	100.7	100.7	100.7	101.8	101.8	102.9
67.5°	79.4	79.4	79.4	79.4	79.4	79.4	80.5	80.5	81.6	81.6	82.8
70°	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	61.5	62.6	62.6
72.5°	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6	44.7	44.7
75°	29.1	29.1	29.1	29.1	29.1	29.1	30.2	30.2	30.2	30.2	30.2
77.5°	17.9	17.9	17.9	17.9	19.0	19.0	19.0	19.0	19.0	19.0	19.0
80°	11.2	11.2	11.2	11.2	11.2	11.2	12.3	12.3	12.3	11.2	12.3
82.5°	6.7	6.7	7.8	6.7	7.8	7.8	7.8	7.8	7.8	7.8	7.8
85°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
87.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3
2.5°	352.3	352.3	352.3	352.3	353.4	352.3	352.3	352.3	352.3	352.3	353.4
5°	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2
7.5°	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9
10°	345.6	344.5	344.5	344.5	345.6	344.5	344.5	344.5	344.5	344.5	344.5
12.5°	340.0	340.0	340.0	340.0	340.0	340.0	340.0	338.9	338.9	338.9	338.9
15°	333.3	333.3	333.3	333.3	333.3	333.3	333.3	333.3	332.1	332.1	332.1
17.5°	326.6	326.6	326.6	326.6	326.6	325.4	325.4	325.4	325.4	324.3	324.3
20°	319.8	319.8	318.7	318.7	318.7	317.6	317.6	316.5	316.5	315.4	315.4
22.5°	312.0	310.9	310.9	309.8	309.8	308.7	307.5	307.5	306.4	305.3	304.2
25°	303.1	302.0	302.0	300.8	299.7	298.6	298.6	296.4	295.2	294.1	293.0
27.5°	294.1	294.1	293.0	290.8	289.7	288.5	286.3	285.2	282.9	280.7	278.5
30°	285.2	284.1	282.9	280.7	279.6	277.4	275.1	272.9	269.5	266.2	262.8
32.5°	275.1	274.0	271.8	269.5	267.3	265.0	261.7	258.3	253.9	249.4	244.9
35°	265.0	263.9	261.7	258.3	255.0	251.6	248.3	242.7	237.1	231.5	224.8
37.5°	255.0	252.7	249.4	246.0	242.7	237.1	232.6	225.9	219.2	211.4	202.4
40°	243.8	241.6	237.1	232.6	227.0	221.4	215.8	208.0	199.1	189.0	178.9
42.5°	233.7	229.3	224.8	219.2	212.5	204.7	196.8	187.9	176.7	165.5	154.3
45°	223.7	218.1	211.4	203.5	194.6	185.6	175.6	165.5	154.3	142.0	129.7
47.5°	213.6	206.9	199.1	187.9	176.7	165.5	154.3	142.0	129.7	118.5	106.2
50°	205.8	197.9	186.8	174.5	158.8	145.4	132.0	119.7	107.4	96.2	85.0
52.5°	197.9	189.0	176.7	159.9	143.1	126.4	110.7	98.4	87.2	77.2	68.2
55°	182.3	173.3	159.9	142.0	124.1	106.2	90.6	78.3	69.3	61.5	54.8
57.5°	159.9	152.1	138.7	120.8	102.9	85.0	71.6	60.4	52.6	48.1	43.6
60°	139.8	133.1	120.8	104.0	86.1	69.3	55.9	47.0	41.4	38.0	36.9
62.5°	120.8	115.2	104.0	89.5	73.8	58.2	45.9	39.1	34.7	33.6	31.3
65°	101.8	97.3	89.5	76.0	62.6	49.2	39.1	33.6	30.2	29.1	28.0
67.5°	82.8	80.5	72.7	62.6	51.4	41.4	33.6	29.1	26.8	25.7	25.7
70°	62.6	61.5	57.0	49.2	41.4	33.6	28.0	24.6	23.5	23.5	23.5
72.5°	45.9	44.7	42.5	36.9	31.3	26.8	22.4	21.2	20.1	20.1	20.1
75°	31.3	31.3	29.1	26.8	23.5	20.1	17.9	16.8	16.8	16.8	16.8
77.5°	19.0	20.1	19.0	17.9	16.8	14.5	13.4	13.4	13.4	13.4	13.4
80°	12.3	12.3	12.3	12.3	11.2	10.1	10.1	10.1	10.1	10.1	10.1
82.5°	7.8	7.8	7.8	7.8	7.8	7.8	6.7	6.7	6.7	6.7	6.7
85°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
87.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3
2.5°	353.4	352.3	352.3	352.3	352.3	352.3	352.3	352.3	352.3	353.4	352.3
5°	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2	351.2
7.5°	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9	348.9	347.8
10°	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5	344.5
12.5°	340.0	338.9	338.9	338.9	338.9	338.9	338.9	338.9	338.9	338.9	338.9
15°	332.1	332.1	332.1	332.1	332.1	332.1	332.1	332.1	332.1	332.1	332.1
17.5°	324.3	324.3	324.3	323.2	323.2	323.2	323.2	323.2	323.2	323.2	323.2
20°	314.3	314.3	314.3	313.1	313.1	313.1	313.1	314.3	313.1	313.1	313.1
22.5°	304.2	303.1	302.0	302.0	302.0	300.8	300.8	302.0	300.8	302.0	300.8
25°	291.9	289.7	288.5	288.5	287.4	287.4	287.4	287.4	287.4	287.4	287.4
27.5°	277.4	275.1	274.0	272.9	271.8	271.8	270.6	270.6	270.6	270.6	270.6
30°	260.6	258.3	256.1	253.9	253.9	252.7	252.7	251.6	251.6	252.7	251.6
32.5°	241.6	237.1	234.9	232.6	231.5	230.4	230.4	229.3	230.4	230.4	229.3
35°	220.3	214.7	211.4	208.0	206.9	205.8	205.8	204.7	204.7	204.7	204.7
37.5°	195.7	189.0	183.4	181.2	178.9	177.8	176.7	176.7	176.7	176.7	176.7
40°	168.9	161.0	155.5	152.1	149.9	148.7	148.7	147.6	147.6	147.6	147.6
42.5°	143.1	134.2	127.5	124.1	121.9	120.8	120.8	119.7	119.7	119.7	119.7
45°	118.5	108.5	101.8	98.4	97.3	96.2	95.1	95.1	95.1	95.1	95.1
47.5°	96.2	87.2	80.5	77.2	76.0	74.9	74.9	74.9	74.9	74.9	74.9
50°	76.0	69.3	63.7	61.5	60.4	59.3	59.3	59.3	59.3	59.3	59.3
52.5°	60.4	54.8	51.4	50.3	49.2	48.1	48.1	48.1	48.1	48.1	48.1
55°	49.2	45.9	43.6	42.5	41.4	41.4	41.4	41.4	41.4	41.4	41.4
57.5°	41.4	39.1	38.0	38.0	36.9	36.9	36.9	36.9	36.9	36.9	36.9
60°	35.8	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	34.7	33.6
62.5°	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3	31.3
65°	28.0	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	28.0	28.0
67.5°	25.7	25.7	26.8	26.8	26.8	25.7	25.7	25.7	25.7	25.7	25.7
70°	23.5	23.5	23.5	23.5	23.5	23.5	22.4	22.4	22.4	22.4	22.4
72.5°	20.1	20.1	20.1	20.1	20.1	19.0	19.0	19.0	19.0	19.0	19.0
75°	16.8	16.8	16.8	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
77.5°	13.4	13.4	13.4	13.4	12.3	12.3	12.3	12.3	12.3	12.3	12.3
80°	10.1	10.1	10.1	10.1	8.9	8.9	8.9	8.9	8.9	8.9	8.9
82.5°	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
85°	4.5	4.5	3.4	4.5	4.5	3.4	3.4	3.4	3.4	3.4	3.4
87.5°	2.2	2.2	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



TEST NUMBER: P123727

CATALOG NUMBER: EL406935-TL409WHWW

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	352.3	352.3	352.3	352.3
2.5°	352.3	352.3	352.3	353.4
5°	351.2	351.2	351.2	351.2
7.5°	347.8	347.8	347.8	350.0
10°	344.5	344.5	344.5	344.5
12.5°	338.9	338.9	338.9	340.0
15°	332.1	332.1	332.1	332.1
17.5°	323.2	323.2	324.3	324.3
20°	313.1	313.1	314.3	314.3
22.5°	300.8	302.0	302.0	302.0
25°	287.4	287.4	287.4	288.5
27.5°	270.6	271.8	271.8	271.8
30°	251.6	251.6	252.7	252.7
32.5°	229.3	230.4	230.4	230.4
35°	204.7	205.8	205.8	204.7
37.5°	176.7	176.7	177.8	177.8
40°	147.6	147.6	148.7	148.7
42.5°	119.7	119.7	120.8	120.8
45°	95.1	95.1	95.1	95.1
47.5°	74.9	74.9	74.9	74.9
50°	59.3	59.3	59.3	59.3
52.5°	48.1	48.1	48.1	48.1
55°	41.4	41.4	41.4	41.4
57.5°	36.9	36.9	36.9	36.9
60°	33.6	33.6	33.6	33.6
62.5°	31.3	31.3	31.3	31.3
65°	28.0	28.0	28.0	28.0
67.5°	25.7	25.7	25.7	25.7
70°	22.4	22.4	22.4	22.4
72.5°	19.0	19.0	19.0	19.0
75°	15.7	15.7	15.7	15.7
77.5°	12.3	12.3	12.3	12.3
80°	8.9	8.9	8.9	8.9
82.5°	6.7	6.7	6.7	6.7
85°	3.4	3.4	3.4	3.4
87.5°	1.1	1.1	1.1	1.1
90°	0.0	0.0	0.0	0.0

(END OF REPORT)