

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: io LED

Report Number: P182764

Luminaire Tested: **LDSQA4A28935D010TE LAR35FL 4LSQA1H 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182764  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26801)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: LDSQA4A28935D010TE LAR35FL 4LSQA1H 30°  
Description: PORTFOLIO 4" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,  
SELF-FLANGED, 35° FLOOD, 30° Tilt  
Light Source: (1) HIGH LUMEN LED 90CRI / 3500K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2442.2 lumens  
Efficiency: N/A  
Efficacy: 54.9 lumens/watt  
Spacing Criteria (0/90/45): 2.46 / 0.59 / 1.2  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

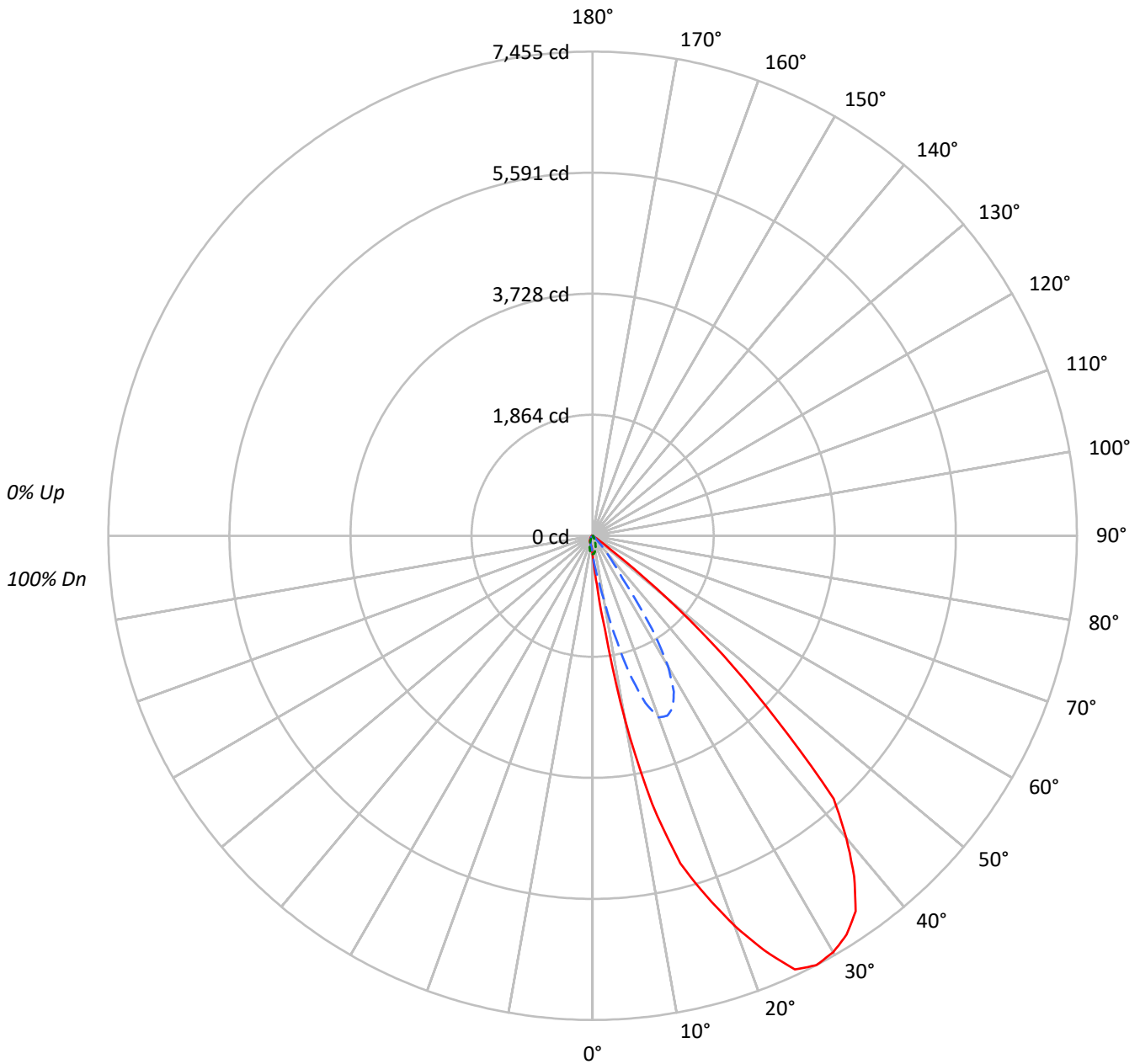
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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	112	109	106	104	110	107	105	102	103	101	99	99	98	96	96	94	93	91					91			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	84	83					83			
3	99	91	85	81	97	90	84	80	87	83	79	85	81	77	82	79	76	74					74			
4	92	83	77	72	91	82	76	71	80	75	71	78	73	70	76	72	69	67					67			
5	86	76	69	64	85	75	69	64	74	68	63	72	67	63	70	66	62	60					60			
6	81	70	63	58	79	69	62	58	68	62	57	66	61	57	65	60	56	55					55			
7	75	64	57	52	74	64	57	52	62	56	52	61	55	51	60	55	51	49					49			
8	71	59	52	47	69	59	52	47	57	51	47	56	51	47	55	50	46	45					45			
9	66	55	48	43	65	54	47	43	53	47	43	52	46	42	51	46	42	41					41			
10	62	50	44	39	61	50	43	39	49	43	39	48	43	39	47	42	39	37					37			

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

	0°	90°	180°
0°	27609	27609	27609
5°	72594	26295	17174
10°	284614	22753	14293
15°	523970	17932	12667
20°	658412	12670	11526
25°	787546	8359	10272
30°	828182	5246	9005
35°	834866	3169	7794
40°	768231	2125	6639
45°	546572	1534	5508
50°	225856	1176	4551
55°	13022	1132	3969
60°	1511	1085	3255
65°	504	1284	2315
70°	623	1275	1586
75°	823	1684	1684
80°	0	2510	1897
85°	0	5002	2445



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	44.8	1.8
10°-20°	357.8	14.7
20°-30°	740.2	30.3
30°-40°	805.8	33.0
40°-50°	441.8	18.1
50°-60°	38.2	1.6
60°-70°	6.2	0.3
70°-80°	4.5	0.2
80°-90°	2.8	0.1
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°	1142.8	46.8
0°-40°	1948.6	79.8
0°-60°	2428.6	99.4
0°-90°	2442.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2442.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	285	285	285	285	285	
5°	746	511	270	187	177	136
15°	5224	2196	179	121	126	1459
25°	7368	2921	78	74	96	3327
35°	7059	799	27	42	66	4332
45°	3990	82	11	24	40	3045
55°	77	9	7	14	24	264
65°	2	3	6	9	10	3
75°	2	3	4	7	4	1
85°	0	2	4	3	2	0
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0
2.5°	448.1	432.5	430.2	432.5	421.3	420.2	422.4	413.5	405.7	397.8	391.1
5°	746.5	714.1	704.0	690.6	657.1	645.9	643.7	607.9	573.3	540.9	510.7
7.5°	1450.5	1385.7	1351.1	1284.0	1181.2	1135.4	1110.8	993.5	884.0	784.5	694.0
10°	2893.3	2723.4	2640.7	2514.4	2289.8	2179.2	2098.7	1803.7	1513.1	1233.7	987.9
12.5°	4222.0	4128.1	4006.3	3939.3	3574.9	3435.3	3302.3	2893.3	2450.7	1999.2	1551.1
15°	5224.4	5086.9	4957.3	4926.0	4639.9	4476.8	4329.3	3905.7	3379.4	2805.0	2195.9
17.5°	5813.3	5715.0	5592.1	5532.8	5197.6	5065.7	4898.1	4488.0	3976.1	3404.0	2696.6
20°	6386.6	6241.3	6068.1	5978.7	5607.7	5455.7	5265.7	4834.4	4292.4	3684.5	2977.1
22.5°	6910.7	6723.0	6477.1	6338.6	5921.7	5754.1	5541.8	5074.7	4488.0	3792.9	3000.5
25°	7367.8	7197.9	6870.5	6628.0	6136.3	5938.5	5691.5	5203.2	4558.4	3783.9	2921.2
27.5°	7455.0	7341.0	7047.1	6766.6	6211.2	5991.0	5735.1	5230.0	4509.2	3659.9	2707.7
30°	7403.6	7280.6	7044.8	6758.8	6179.9	5957.5	5691.5	5116.0	4317.0	3370.4	2316.6
32.5°	7279.5	7173.4	6891.7	6590.0	6025.7	5794.3	5513.8	4848.9	3987.3	2910.0	1704.2
35°	7059.4	6899.6	6559.8	6311.7	5780.9	5542.9	5199.8	4492.4	3494.5	2092.0	799.0
37.5°	6611.2	6455.9	6211.2	5982.1	5464.7	5184.2	4822.1	3996.2	2590.4	1141.0	493.9
40°	6074.8	5940.7	5727.3	5504.9	4971.8	4648.9	4249.9	3123.5	1524.3	642.6	304.0
42.5°	5491.5	5352.9	5111.5	4852.3	4271.2	3930.3	3499.0	2021.6	803.5	378.8	165.4
45°	3989.5	3865.5	3690.0	3503.4	3167.0	2921.2	2353.5	1061.6	444.8	201.2	81.6
47.5°	2730.1	2582.6	2258.5	1866.3	1513.1	1294.1	973.4	460.4	228.0	100.6	48.1
50°	1498.6	1342.1	1176.7	916.4	613.5	504.0	392.2	222.4	102.8	50.3	26.8
52.5°	367.7	325.2	297.3	273.8	216.8	195.6	165.4	92.8	46.9	27.9	19.0
55°	77.1	71.5	68.2	67.1	61.5	59.2	51.4	35.8	25.7	17.9	8.9
57.5°	22.4	21.2	22.4	22.4	22.4	21.2	21.2	15.6	14.5	8.9	5.6
60°	7.8	7.8	7.8	8.9	8.9	8.9	10.1	10.1	7.8	5.6	4.5
62.5°	3.4	3.4	3.4	4.5	4.5	5.6	5.6	5.6	4.5	4.5	3.4
65°	2.2	2.2	2.2	2.2	3.4	3.4	3.4	3.4	3.4	3.4	3.4
67.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	3.4
70°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	3.4
72.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	3.4
75°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	3.4
77.5°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	2.2	2.2	2.2	3.4
80°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	2.2	2.2	2.2	2.2
82.5°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.2	2.2	2.2
85°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.2	2.2	2.2
87.5°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0
2.5°	372.1	361.0	347.5	333.0	330.8	323.0	311.8	296.1	290.6	279.4	269.3
5°	467.1	436.9	405.7	377.7	368.8	356.5	336.4	308.4	290.6	270.4	253.7
7.5°	594.5	525.2	461.5	411.2	395.6	375.5	344.2	308.4	281.6	253.7	231.3
10°	764.4	623.6	514.1	432.5	406.8	380.0	338.6	295.0	263.7	231.3	207.9
12.5°	1091.8	767.7	563.2	443.7	407.9	373.3	320.7	273.8	238.0	205.6	182.2
15°	1552.2	1041.5	662.7	451.5	396.7	354.3	292.8	244.7	209.0	178.8	156.5
17.5°	1941.1	1300.8	795.7	473.8	388.9	329.7	260.4	211.2	176.6	149.7	131.9
20°	2131.1	1417.0	856.0	477.2	366.5	292.8	222.4	175.5	145.3	122.9	107.3
22.5°	2108.8	1377.9	800.1	418.0	309.6	247.0	184.4	141.9	116.2	98.3	87.2
25°	1959.0	1208.0	652.6	319.6	241.4	200.0	144.2	110.6	90.5	78.2	69.3
27.5°	1707.6	970.0	476.1	225.7	183.3	152.0	107.3	84.9	69.3	60.3	54.8
30°	1315.3	620.2	273.8	162.0	133.0	108.4	80.5	61.5	52.5	46.9	42.5
32.5°	678.3	301.7	182.2	116.2	93.9	78.2	55.9	44.7	39.1	35.8	33.5
35°	372.1	214.6	126.3	74.9	60.3	50.3	38.0	31.3	29.1	26.8	26.8
37.5°	255.9	133.0	70.4	44.7	36.9	31.3	25.7	22.4	21.2	21.2	21.2
40°	147.5	70.4	40.2	27.9	23.5	21.2	17.9	16.8	16.8	16.8	17.9
42.5°	76.0	41.3	26.8	19.0	16.8	14.5	12.3	12.3	12.3	13.4	14.5
45°	44.7	27.9	17.9	12.3	11.2	10.1	8.9	8.9	10.1	11.2	12.3
47.5°	27.9	19.0	11.2	7.8	6.7	6.7	6.7	6.7	7.8	8.9	10.1
50°	19.0	10.1	6.7	4.5	4.5	4.5	4.5	5.6	6.7	7.8	8.9
52.5°	10.1	5.6	4.5	3.4	3.4	3.4	4.5	4.5	5.6	6.7	7.8
55°	5.6	4.5	3.4	3.4	3.4	3.4	3.4	4.5	5.6	6.7	7.8
57.5°	4.5	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	5.6	6.7
60°	3.4	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	5.6	6.7
62.5°	3.4	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	5.6	5.6
65°	3.4	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	5.6	5.6
67.5°	3.4	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	4.5	5.6
70°	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	4.5	4.5	5.6
72.5°	3.4	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	4.5	4.5
75°	3.4	3.4	3.4	3.4	3.4	4.5	4.5	4.5	4.5	4.5	5.6
77.5°	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	4.5	4.5	4.5
80°	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	4.5	4.5	4.5
82.5°	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	4.5	4.5	4.5
85°	3.4	3.4	3.4	3.4	3.4	4.5	4.5	4.5	4.5	4.5	4.5
87.5°	3.4	3.4	3.4	3.4	3.4	3.4	4.5	4.5	4.5	4.5	4.5
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):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0
2.5°	263.7	254.8	245.9	245.9	241.4	234.7	232.4	225.7	221.3	219.0	216.8
5°	241.4	228.0	215.7	214.6	209.0	201.2	197.8	191.1	186.6	184.4	183.3
7.5°	215.7	202.3	190.0	187.7	183.3	177.7	174.3	168.7	166.5	164.3	163.2
10°	191.1	177.7	168.7	166.5	163.2	158.7	155.3	152.0	149.7	148.6	148.6
12.5°	166.5	156.5	148.6	146.4	144.2	140.8	138.6	136.3	135.2	135.2	135.2
15°	144.2	135.2	128.5	128.5	126.3	124.0	124.0	121.8	120.7	121.8	122.9
17.5°	121.8	115.1	109.5	109.5	108.4	107.3	107.3	107.3	108.4	109.5	111.8
20°	100.6	95.0	92.8	92.8	91.6	92.8	92.8	93.9	95.0	98.3	101.7
22.5°	81.6	78.2	76.0	77.1	77.1	78.2	79.3	81.6	83.8	87.2	90.5
25°	65.9	63.7	62.6	63.7	64.8	65.9	68.2	70.4	73.8	77.1	81.6
27.5°	52.5	51.4	51.4	52.5	53.6	55.9	59.2	61.5	64.8	68.2	72.6
30°	42.5	41.3	42.5	44.7	45.8	48.1	50.3	53.6	57.0	60.3	64.8
32.5°	33.5	34.6	35.8	36.9	38.0	41.3	43.6	45.8	49.2	52.5	57.0
35°	27.9	29.1	30.2	31.3	32.4	34.6	36.9	39.1	42.5	45.8	50.3
37.5°	22.4	23.5	24.6	26.8	27.9	29.1	32.4	33.5	36.9	39.1	43.6
40°	19.0	20.1	21.2	22.4	23.5	25.7	27.9	29.1	31.3	34.6	38.0
42.5°	15.6	16.8	17.9	19.0	20.1	22.4	23.5	25.7	27.9	30.2	32.4
45°	13.4	14.5	15.6	16.8	17.9	19.0	20.1	22.4	23.5	25.7	27.9
47.5°	11.2	12.3	14.5	14.5	15.6	16.8	17.9	19.0	21.2	22.4	24.6
50°	10.1	11.2	12.3	13.4	13.4	14.5	15.6	16.8	17.9	19.0	21.2
52.5°	8.9	10.1	11.2	11.2	12.3	13.4	14.5	14.5	15.6	16.8	17.9
55°	7.8	8.9	10.1	10.1	11.2	12.3	12.3	13.4	14.5	14.5	15.6
57.5°	7.8	7.8	8.9	8.9	10.1	10.1	11.2	12.3	12.3	13.4	14.5
60°	6.7	7.8	7.8	8.9	8.9	10.1	10.1	11.2	11.2	12.3	12.3
62.5°	6.7	6.7	7.8	7.8	8.9	8.9	10.1	10.1	10.1	11.2	11.2
65°	6.7	6.7	7.8	7.8	7.8	8.9	8.9	8.9	8.9	10.1	10.1
67.5°	5.6	6.7	6.7	7.8	7.8	7.8	7.8	7.8	8.9	8.9	8.9
70°	5.6	6.7	6.7	6.7	6.7	7.8	7.8	7.8	7.8	7.8	7.8
72.5°	5.6	5.6	5.6	5.6	6.7	6.7	6.7	6.7	6.7	6.7	6.7
75°	5.6	5.6	5.6	5.6	5.6	6.7	6.7	6.7	6.7	6.7	6.7
77.5°	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
80°	4.5	4.5	4.5	4.5	4.5	5.6	4.5	4.5	4.5	4.5	4.5
82.5°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.4	3.4
85°	4.5	4.5	4.5	4.5	4.5	4.5	4.5	3.4	3.4	3.4	3.4
87.5°	4.5	4.5	4.5	3.4	3.4	3.4	3.4	3.4	3.4	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





TEST NUMBER: P182764

CATALOG NUMBER: LDSQA4A28935D010TE LAR35FL 4LSQA1H 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0
2.5°	213.4	211.2	213.4	211.2	211.2	206.7	210.1	207.9
5°	179.9	177.7	179.9	178.8	176.6	175.5	177.7	176.6
7.5°	160.9	158.7	160.9	160.9	158.7	157.6	159.8	158.7
10°	146.4	145.3	146.4	146.4	145.3	144.2	146.4	145.3
12.5°	134.1	133.0	135.2	135.2	134.1	134.1	136.3	134.1
15°	122.9	122.9	125.2	125.2	125.2	125.2	127.4	126.3
17.5°	111.8	114.0	116.2	117.3	117.3	117.3	119.6	119.6
20°	102.8	105.0	107.3	108.4	109.5	109.5	111.8	111.8
22.5°	92.8	95.0	98.3	99.5	100.6	101.7	103.9	103.9
25°	83.8	86.0	89.4	90.5	92.8	93.9	96.1	96.1
27.5°	74.9	78.2	80.5	82.7	83.8	86.0	88.3	88.3
30°	67.1	70.4	72.6	74.9	76.0	78.2	80.5	80.5
32.5°	59.2	62.6	64.8	67.1	69.3	70.4	73.8	73.8
35°	52.5	54.8	58.1	59.2	61.5	63.7	65.9	65.9
37.5°	45.8	48.1	50.3	52.5	54.8	55.9	58.1	59.2
40°	40.2	42.5	44.7	45.8	48.1	50.3	51.4	52.5
42.5°	34.6	36.9	39.1	40.2	42.5	43.6	45.8	45.8
45°	30.2	32.4	33.5	34.6	36.9	38.0	40.2	40.2
47.5°	25.7	27.9	29.1	30.2	31.3	32.4	34.6	34.6
50°	22.4	23.5	24.6	25.7	26.8	29.1	30.2	30.2
52.5°	19.0	21.2	21.2	22.4	23.5	24.6	25.7	26.8
55°	16.8	17.9	19.0	19.0	20.1	21.2	22.4	23.5
57.5°	14.5	15.6	16.8	16.8	17.9	17.9	19.0	20.1
60°	13.4	13.4	14.5	14.5	14.5	15.6	15.6	16.8
62.5°	11.2	11.2	12.3	12.3	12.3	12.3	12.3	12.3
65°	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
67.5°	8.9	8.9	8.9	8.9	7.8	7.8	7.8	7.8
70°	7.8	7.8	7.8	7.8	6.7	6.7	6.7	5.6
72.5°	6.7	6.7	6.7	6.7	5.6	5.6	4.5	4.5
75°	5.6	5.6	5.6	5.6	5.6	4.5	4.5	4.5
77.5°	5.6	4.5	4.5	4.5	4.5	4.5	4.5	3.4
80°	4.5	4.5	3.4	3.4	3.4	3.4	3.4	3.4
82.5°	3.4	3.4	3.4	3.4	2.2	2.2	2.2	2.2
85°	3.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2
87.5°	2.2	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



Report Generated By E9808895 / USPTCWHP6082093





— 0°-180°    - - 45°-225°    - - - - 90°-270°















(END OF REPORT)