

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: P182861

Luminaire Tested: **LDSQA4A28940D010TE LAR35FL 4LSQAL1H 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182861  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26804)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: LDSQA4A28940D010TE LAR35FL 4LSQAL1H 30°  
Description: PORTFOLIO 4" SQUARE LENSED ADJUSTABLE, SELF-FLANGED, 35° FLOOD, 30° Tilt  
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2449.7 lumens  
Efficiency: N/A  
Efficacy: 55.1 lumens/watt  
Spacing Criteria (0/90/45): 2.46 / 0.61 / 1.2  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

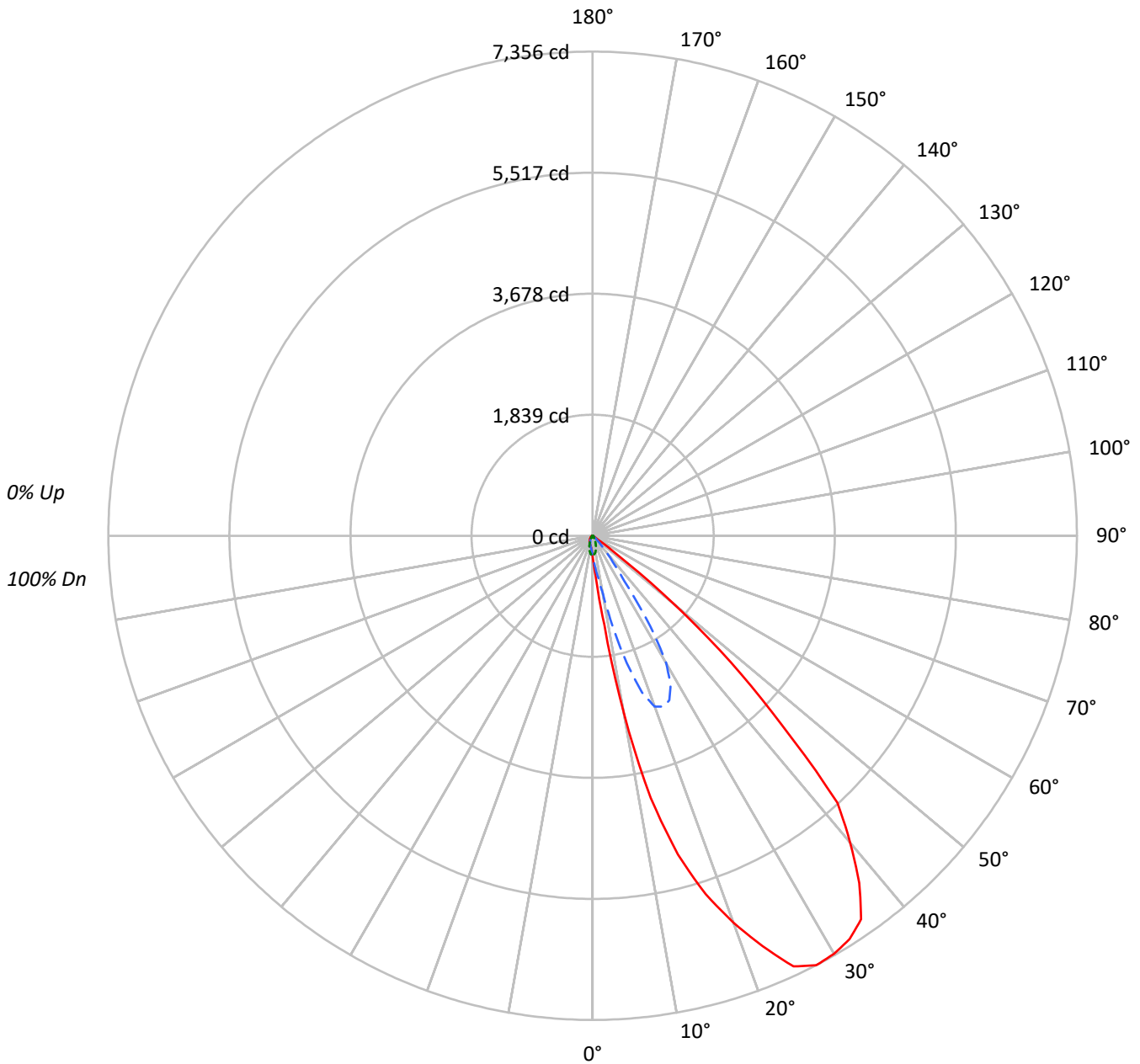
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	104	102	103	101	99	99	97	96	96	94	93	91					91			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	86	84	82					82			
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74					74			
4	92	83	77	71	90	82	76	71	80	74	70	78	73	69	76	72	68	67					67			
5	86	76	69	64	84	75	68	64	73	67	63	71	66	62	70	65	62	60					60			
6	80	70	62	57	79	69	62	57	67	61	57	66	60	56	64	59	56	54					54			
7	75	64	57	52	74	63	56	51	62	56	51	60	55	51	59	54	50	49					49			
8	70	59	52	47	69	58	51	46	57	51	46	56	50	46	55	50	46	44					44			
9	66	54	47	42	64	54	47	42	53	46	42	52	46	42	51	45	42	40					40			
10	62	50	43	38	60	50	43	38	49	42	38	48	42	38	47	42	38	36					36			

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

	0°	90°	180°
0°	29344	29344	29344
5°	68772	27696	19362
10°	271737	24337	16142
15°	502908	19487	14161
20°	644845	14186	12814
25°	771534	10058	11352
30°	820386	6611	9989
35°	840779	3997	8704
40°	769647	2592	7474
45°	555367	1822	6124
50°	242449	1462	5094
55°	16721	1216	4273
60°	3042	1163	3507
65°	1100	1100	2499
70°	1020	1360	1699
75°	898	1797	1797
80°	0	2678	2008
85°	0	5335	1334



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	44.1	1.8
10°-20°	346.8	14.2
20°-30°	725.9	29.6
30°-40°	808.1	33.0
40°-50°	463.9	18.9
50°-60°	46.3	1.9
60°-70°	7.3	0.3
70°-80°	4.6	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°	1116.8	45.6
0°-40°	1924.9	78.6
0°-60°	2435.1	99.4
0°-90°	2449.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2449.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	303	303	303	303	303	
5°	707	488	285	208	199	130
15°	5014	2002	194	136	141	1417
25°	7218	2755	94	83	106	3269
35°	7109	841	34	48	74	4341
45°	4054	101	13	27	45	3095
55°	99	14	7	16	25	295
65°	5	4	5	10	11	6
75°	2	2	5	6	5	2
85°	0	2	5	4	1	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°	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9
2.5°	452.6	442.9	433.3	427.2	421.2	429.6	423.6	421.2	404.3	395.8	388.6
5°	707.2	689.1	662.5	640.8	619.1	623.9	607.0	586.5	544.3	514.1	487.6
7.5°	1364.9	1320.3	1238.2	1158.6	1078.9	1064.4	1011.3	919.6	801.3	712.0	634.8
10°	2762.4	2627.3	2476.4	2313.5	2122.8	2069.7	1938.2	1689.6	1418.0	1107.9	883.4
12.5°	4077.9	4016.3	3838.9	3627.7	3421.4	3294.6	3158.3	2747.9	2317.1	1817.5	1399.9
15°	5014.4	4977.0	4821.3	4629.4	4407.3	4325.3	4158.7	3749.6	3205.3	2608.0	2002.1
17.5°	5708.3	5644.3	5481.4	5272.6	5009.5	4939.6	4740.4	4333.7	3768.9	3169.1	2496.9
20°	6255.0	6215.2	6004.0	5753.0	5438.0	5353.5	5120.6	4697.0	4082.7	3445.5	2761.2
22.5°	6746.2	6678.6	6419.1	6119.8	5760.2	5669.7	5410.2	4945.6	4285.4	3575.8	2808.3
25°	7218.0	7115.5	6800.5	6408.3	5985.9	5862.8	5578.0	5085.6	4360.3	3586.7	2755.2
27.5°	7355.6	7303.7	7012.9	6556.7	6067.9	5929.2	5632.3	5117.0	4332.5	3487.7	2564.5
30°	7333.9	7290.5	7047.9	6571.2	6053.5	5907.4	5605.7	5020.4	4170.8	3229.5	2227.8
32.5°	7265.1	7248.2	6955.0	6445.7	5918.3	5759.0	5433.1	4780.2	3867.9	2836.0	1628.0
35°	7109.4	7043.1	6677.4	6198.3	5691.4	5516.4	5148.3	4436.3	3468.4	2064.9	841.2
37.5°	6653.2	6601.4	6312.9	5892.9	5399.4	5174.9	4786.3	3992.2	2685.2	1174.2	503.2
40°	6086.0	6060.7	5833.8	5458.5	4931.1	4677.7	4255.3	3266.9	1638.9	667.4	331.9
42.5°	5504.3	5497.1	5254.5	4862.3	4290.3	3999.4	3561.4	2203.7	871.3	403.1	191.9
45°	4053.7	4097.2	3928.2	3692.9	3256.0	3044.8	2476.4	1135.6	502.0	223.3	101.4
47.5°	2843.3	2795.0	2495.7	2084.2	1684.7	1426.5	1078.9	537.0	267.9	117.1	57.9
50°	1608.7	1617.2	1346.8	1089.8	714.4	566.0	429.6	270.3	129.1	61.5	35.0
52.5°	420.0	439.3	378.9	325.8	277.6	225.7	182.2	117.1	61.5	36.2	22.9
55°	99.0	102.6	95.3	89.3	84.5	74.8	66.4	50.7	33.8	22.9	14.5
57.5°	35.0	36.2	35.0	35.0	33.8	32.6	30.2	26.6	20.5	14.5	9.7
60°	15.7	16.9	15.7	16.9	16.9	16.9	16.9	16.9	12.1	8.4	6.0
62.5°	7.2	7.2	7.2	7.2	8.4	8.4	9.7	9.7	7.2	6.0	4.8
65°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	3.6
67.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
70°	3.6	3.6	3.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	3.6
72.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
75°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
77.5°	0.0	0.0	0.0	1.2	1.2	1.2	1.2	2.4	2.4	2.4	2.4
80°	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4	2.4
82.5°	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4	2.4
85°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	2.4	2.4	2.4
87.5°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	2.4	2.4	2.4
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°	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9
2.5°	375.3	374.1	360.8	351.2	346.4	339.1	330.7	318.6	305.3	293.3	288.4
5°	456.2	440.5	412.7	389.8	378.9	368.1	348.8	327.1	306.5	284.8	274.0
7.5°	561.2	515.3	461.0	418.8	400.7	382.6	354.8	324.6	296.9	267.9	252.2
10°	704.8	598.6	504.5	436.9	410.3	386.2	346.4	308.9	278.8	247.4	226.9
12.5°	1007.7	744.6	550.3	445.3	410.3	378.9	330.7	287.2	253.4	220.8	201.5
15°	1451.8	1005.3	650.5	453.8	401.9	362.0	306.5	259.5	223.3	194.3	176.2
17.5°	1810.2	1245.4	774.8	475.5	391.0	339.1	275.2	225.7	191.9	165.3	150.9
20°	1991.3	1346.8	831.5	479.1	364.5	302.9	237.7	190.7	160.5	137.6	125.5
22.5°	1987.6	1314.2	780.8	420.0	319.8	261.9	200.3	156.9	132.8	114.6	105.0
25°	1862.1	1163.4	651.7	335.5	258.3	217.2	162.9	126.7	107.4	94.1	85.7
27.5°	1626.8	944.9	486.4	248.6	201.5	171.4	126.7	101.4	85.7	76.0	70.0
30°	1276.8	632.4	306.5	184.6	153.3	129.1	97.8	78.4	67.6	59.1	55.5
32.5°	703.6	329.5	206.4	135.2	112.2	94.1	72.4	56.7	49.5	43.4	42.2
35°	388.6	232.9	147.2	90.5	74.8	64.0	49.5	41.0	36.2	33.8	33.8
37.5°	275.2	149.6	88.1	56.7	48.3	42.2	33.8	29.0	27.8	26.6	26.6
40°	165.3	88.1	53.1	37.4	32.6	29.0	25.3	21.7	21.7	20.5	21.7
42.5°	90.5	53.1	36.2	26.6	22.9	21.7	18.1	16.9	16.9	16.9	18.1
45°	54.3	35.0	25.3	19.3	16.9	14.5	13.3	12.1	13.3	13.3	14.5
47.5°	35.0	25.3	16.9	12.1	10.9	9.7	8.4	9.7	9.7	10.9	12.1
50°	24.1	15.7	10.9	7.2	7.2	6.0	7.2	7.2	8.4	9.7	10.9
52.5°	15.7	10.9	7.2	6.0	4.8	4.8	4.8	6.0	7.2	8.4	9.7
55°	9.7	7.2	6.0	4.8	4.8	4.8	4.8	4.8	6.0	7.2	8.4
57.5°	7.2	6.0	4.8	3.6	3.6	3.6	4.8	4.8	6.0	6.0	7.2
60°	4.8	4.8	3.6	3.6	3.6	3.6	3.6	4.8	4.8	6.0	7.2
62.5°	4.8	4.8	3.6	3.6	3.6	3.6	4.8	4.8	4.8	6.0	6.0
65°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	4.8	6.0
67.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	6.0
70°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	6.0
72.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	4.8
75°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	4.8	4.8
77.5°	2.4	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	4.8	4.8
80°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	4.8	4.8
82.5°	2.4	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	4.8	4.8
85°	2.4	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	4.8	4.8
87.5°	2.4	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.8	4.8	4.8
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°	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9
2.5°	282.4	274.0	266.7	269.1	264.3	255.8	253.4	247.4	240.2	239.0	239.0
5°	261.9	248.6	237.7	236.5	231.7	222.1	219.6	213.6	207.6	206.4	205.2
7.5°	236.5	222.1	212.4	210.0	206.4	197.9	196.7	190.7	187.1	184.6	184.6
10°	211.2	197.9	189.5	188.3	185.9	178.6	177.4	172.6	169.0	167.7	166.5
12.5°	187.1	176.2	169.0	167.7	165.3	159.3	158.1	154.5	152.1	150.9	150.9
15°	164.1	154.5	148.4	147.2	146.0	140.0	140.0	137.6	136.4	136.4	137.6
17.5°	141.2	132.8	127.9	126.7	126.7	121.9	123.1	121.9	121.9	121.9	124.3
20°	118.3	111.0	107.4	108.6	106.2	105.0	106.2	106.2	106.2	108.6	112.2
22.5°	99.0	92.9	89.3	90.5	90.5	89.3	90.5	91.7	94.1	97.8	101.4
25°	80.9	76.0	74.8	76.0	76.0	76.0	78.4	80.9	83.3	86.9	90.5
27.5°	65.2	61.5	61.5	62.8	64.0	64.0	67.6	70.0	73.6	77.2	80.9
30°	51.9	50.7	50.7	53.1	53.1	54.3	59.1	61.5	64.0	67.6	71.2
32.5°	41.0	41.0	42.2	44.7	44.7	47.1	50.7	53.1	55.5	59.1	62.8
35°	33.8	35.0	36.2	37.4	38.6	39.8	43.4	45.9	48.3	51.9	54.3
37.5°	27.8	29.0	30.2	32.6	32.6	33.8	37.4	39.8	41.0	44.7	48.3
40°	22.9	24.1	25.3	27.8	27.8	29.0	32.6	33.8	35.0	38.6	42.2
42.5°	19.3	20.5	21.7	22.9	24.1	25.3	27.8	29.0	31.4	33.8	36.2
45°	15.7	16.9	18.1	19.3	20.5	21.7	22.9	25.3	26.6	29.0	31.4
47.5°	13.3	14.5	15.7	16.9	18.1	18.1	20.5	21.7	22.9	25.3	27.8
50°	12.1	13.3	14.5	14.5	15.7	16.9	18.1	19.3	20.5	21.7	24.1
52.5°	9.7	10.9	12.1	13.3	13.3	14.5	15.7	16.9	18.1	19.3	20.5
55°	9.7	9.7	10.9	12.1	12.1	13.3	14.5	15.7	15.7	16.9	18.1
57.5°	8.4	9.7	9.7	10.9	10.9	12.1	13.3	13.3	14.5	14.5	15.7
60°	7.2	8.4	9.7	9.7	9.7	10.9	10.9	12.1	12.1	13.3	13.3
62.5°	7.2	8.4	8.4	9.7	9.7	9.7	10.9	10.9	10.9	12.1	12.1
65°	7.2	7.2	8.4	8.4	8.4	8.4	9.7	9.7	9.7	10.9	10.9
67.5°	6.0	7.2	7.2	7.2	8.4	8.4	8.4	8.4	8.4	9.7	9.7
70°	6.0	6.0	7.2	7.2	7.2	7.2	7.2	8.4	8.4	8.4	8.4
72.5°	6.0	6.0	6.0	6.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2
75°	4.8	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
77.5°	4.8	4.8	4.8	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
80°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
82.5°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	3.6	3.6
85°	4.8	4.8	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
87.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	2.4	2.4	2.4
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: P182861

CATALOG NUMBER: LDSQA4A28940D010TE LAR35FL 4LSQAL1H 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	302.9	302.9	302.9	302.9	302.9	302.9	302.9	302.9
2.5°	234.1	231.7	230.5	234.1	229.3	231.7	230.5	231.7
5°	201.5	199.1	197.9	201.5	196.7	199.1	196.7	199.1
7.5°	181.0	179.8	178.6	181.0	177.4	179.8	178.6	179.8
10°	164.1	162.9	161.7	165.3	161.7	164.1	162.9	164.1
12.5°	149.6	149.6	148.4	150.9	148.4	150.9	149.6	150.9
15°	136.4	137.6	136.4	138.8	137.6	140.0	138.8	141.2
17.5°	125.5	126.7	126.7	130.3	129.1	132.8	131.5	132.8
20°	114.6	115.9	117.1	119.5	119.5	123.1	121.9	124.3
22.5°	103.8	106.2	106.2	109.8	109.8	113.4	113.4	114.6
25°	92.9	96.5	97.8	100.2	101.4	105.0	105.0	106.2
27.5°	84.5	86.9	88.1	91.7	92.9	96.5	96.5	99.0
30°	74.8	78.4	79.7	82.1	83.3	86.9	86.9	89.3
32.5°	66.4	68.8	71.2	73.6	74.8	78.4	78.4	80.9
35°	57.9	61.5	62.8	65.2	67.6	71.2	71.2	73.6
37.5°	50.7	54.3	55.5	57.9	60.3	64.0	64.0	66.4
40°	44.7	48.3	49.5	51.9	53.1	57.9	57.9	59.1
42.5°	39.8	42.2	43.4	45.9	47.1	49.5	49.5	51.9
45°	33.8	36.2	37.4	38.6	41.0	43.4	43.4	44.7
47.5°	29.0	31.4	32.6	33.8	35.0	37.4	37.4	39.8
50°	25.3	26.6	27.8	29.0	30.2	32.6	32.6	33.8
52.5°	21.7	22.9	24.1	25.3	26.6	27.8	29.0	30.2
55°	19.3	20.5	20.5	21.7	22.9	24.1	24.1	25.3
57.5°	16.9	18.1	18.1	18.1	19.3	20.5	20.5	21.7
60°	14.5	15.7	15.7	15.7	16.9	16.9	16.9	18.1
62.5°	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
65°	10.9	10.9	10.9	10.9	10.9	10.9	9.7	10.9
67.5°	9.7	9.7	9.7	8.4	8.4	8.4	8.4	8.4
70°	8.4	8.4	8.4	7.2	7.2	7.2	6.0	6.0
72.5°	7.2	7.2	7.2	6.0	6.0	6.0	4.8	4.8
75°	6.0	6.0	6.0	6.0	4.8	4.8	4.8	4.8
77.5°	4.8	4.8	4.8	4.8	4.8	4.8	3.6	3.6
80°	4.8	3.6	3.6	3.6	3.6	3.6	3.6	3.6
82.5°	3.6	3.6	3.6	3.6	2.4	2.4	2.4	2.4
85°	2.4	2.4	2.4	2.4	2.4	2.4	1.2	1.2
87.5°	2.4	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



Report Generated By E9808895 / USPTCWHP6082093





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















(END OF REPORT)