

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: P182760

Luminaire Tested: **LDSQA4A28835D010TE LAR35FL 4LSQA1H 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182760  
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: LDSQA4A28835D010TE LAR35FL 4LSQA1H 30°  
Description: PORTFOLIO 4" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,  
SELF-FLANGED, 35° FLOOD, 30° Tilt  
Light Source: (1) HIGH LUMEN LED 80CRI / 3500K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2992.7 lumens  
Efficiency: N/A  
Efficacy: 67.3 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

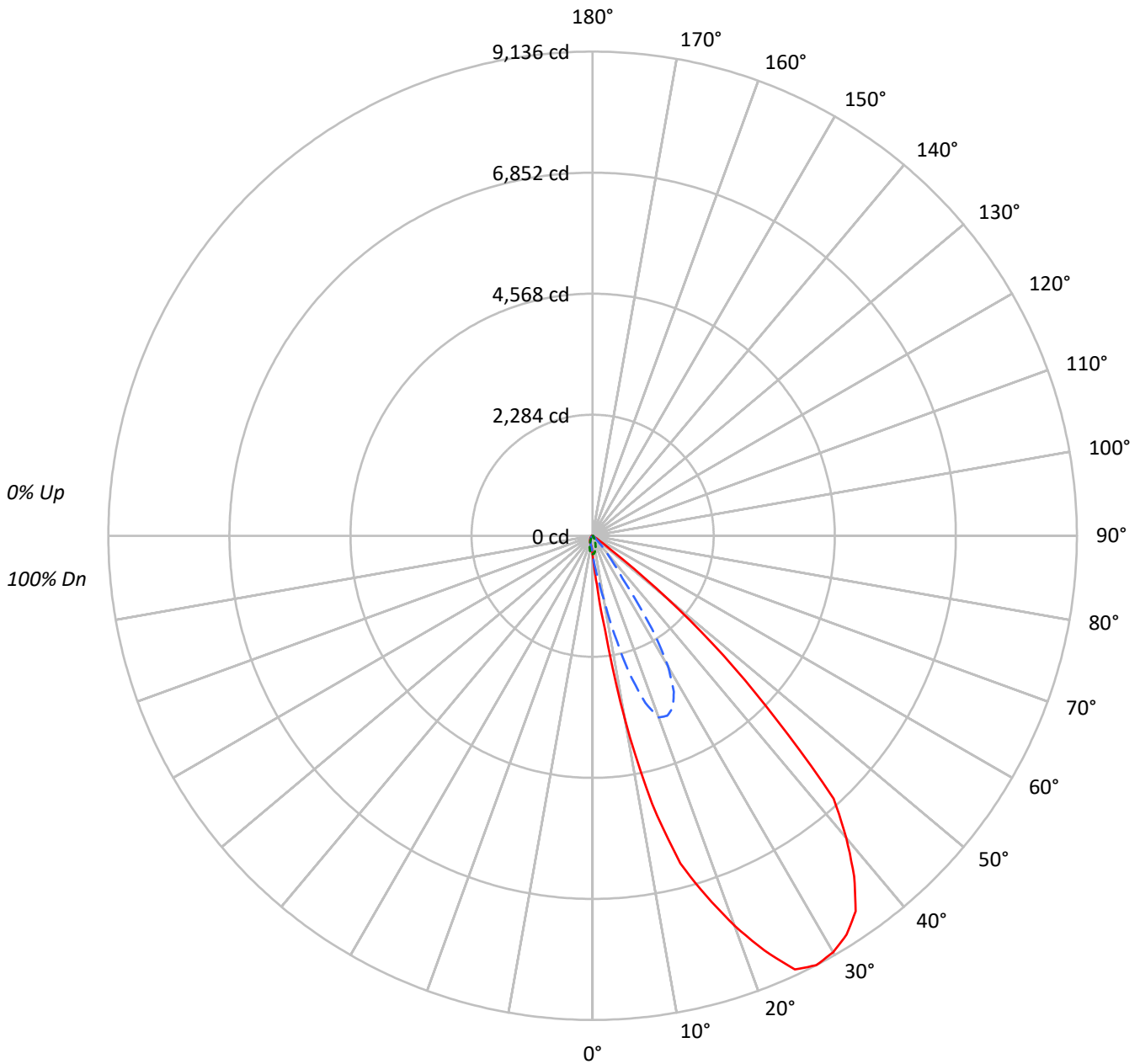
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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°	33829	33829	33829
5°	88960	32227	21044
10°	348770	27888	17510
15°	642095	21974	15515
20°	806855	15526	14113
25°	965101	10251	12592
30°	1014891	6432	11030
35°	1023082	3891	9556
40°	941433	2592	8144
45°	669805	1877	6754
50°	276766	1447	5576
55°	15961	1385	4864
60°	1860	1318	3972
65°	619	1559	2819
70°	765	1558	1926
75°	1011	2059	2059
80°	0	3068	2287
85°	0	6113	3001



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	54.9	1.8
10°-20°	438.5	14.7
20°-30°	907.1	30.3
30°-40°	987.4	33.0
40°-50°	541.4	18.1
50°-60°	46.9	1.6
60°-70°	7.6	0.3
70°-80°	5.5	0.2
80°-90°	3.4	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°	1400.5	46.8
0°-40°	2387.9	79.8
0°-60°	2976.2	99.4
0°-90°	2992.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2992.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	349	349	349	349	349	
5°	915	626	331	229	216	167
15°	6402	2691	219	148	155	1788
25°	9029	3580	96	90	118	4077
35°	8651	979	33	52	81	5309
45°	4889	100	14	29	49	3732
55°	94	11	8	18	29	323
65°	3	4	7	11	12	4
75°	3	4	6	8	6	2
85°	0	3	6	4	3	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°	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2
2.5°	549.2	530.0	527.2	530.0	516.3	514.9	517.7	506.7	497.1	487.5	479.3
5°	914.8	875.1	862.8	846.3	805.2	791.5	788.8	745.0	702.5	662.8	625.8
7.5°	1777.6	1698.1	1655.7	1573.5	1447.5	1391.4	1361.2	1217.5	1083.2	961.4	850.4
10°	3545.5	3337.4	3236.0	3081.3	2806.0	2670.5	2571.8	2210.3	1854.3	1511.9	1210.6
12.5°	5173.8	5058.8	4909.5	4827.4	4380.9	4209.7	4046.8	3545.5	3003.2	2450.0	1900.8
15°	6402.2	6233.8	6074.9	6036.6	5686.0	5486.1	5305.3	4786.3	4141.3	3437.3	2691.0
17.5°	7123.9	7003.4	6852.8	6780.2	6369.4	6207.8	6002.4	5499.8	4872.5	4171.4	3304.5
20°	7826.5	7648.4	7436.2	7326.6	6872.0	6685.7	6452.9	5924.3	5260.1	4515.1	3648.2
22.5°	8468.8	8238.7	7937.4	7767.6	7256.8	7051.4	6791.2	6218.7	5499.8	4648.0	3677.0
25°	9028.9	8820.7	8419.5	8122.3	7519.7	7277.3	6974.7	6376.2	5586.0	4637.0	3579.8
27.5°	9135.7	8996.0	8635.8	8292.1	7611.5	7341.7	7028.1	6409.1	5525.8	4485.0	3318.2
30°	9072.7	8922.0	8633.1	8282.5	7573.1	7300.6	6974.7	6269.4	5290.2	4130.3	2838.9
32.5°	8920.7	8790.6	8445.5	8075.7	7384.1	7100.7	6756.9	5942.1	4886.2	3566.1	2088.4
35°	8650.9	8455.1	8038.7	7734.7	7084.2	6792.5	6372.1	5505.2	4282.3	2563.6	979.2
37.5°	8101.7	7911.4	7611.5	7330.7	6696.7	6352.9	5909.2	4897.2	3174.4	1398.2	605.3
40°	7444.4	7280.1	7018.5	6746.0	6092.7	5697.0	5208.1	3827.6	1867.9	787.4	372.5
42.5°	6729.5	6559.7	6263.9	5946.2	5234.1	4816.4	4287.8	2477.4	984.6	464.2	202.7
45°	4889.0	4737.0	4522.0	4293.3	3881.1	3579.8	2884.1	1301.0	545.0	246.5	100.0
47.5°	3345.6	3164.8	2767.7	2287.0	1854.3	1585.8	1192.8	564.2	279.4	123.3	58.9
50°	1836.4	1644.7	1442.0	1123.0	751.8	617.6	480.7	272.5	126.0	61.6	32.9
52.5°	450.6	398.5	364.3	335.5	265.7	239.7	202.7	113.7	57.5	34.2	23.3
55°	94.5	87.6	83.5	82.2	75.3	72.6	63.0	43.8	31.5	21.9	11.0
57.5°	27.4	26.0	27.4	27.4	27.4	26.0	26.0	19.2	17.8	11.0	6.8
60°	9.6	9.6	9.6	11.0	11.0	11.0	12.3	12.3	9.6	6.8	5.5
62.5°	4.1	4.1	4.1	5.5	5.5	6.8	6.8	6.8	5.5	5.5	4.1
65°	2.7	2.7	2.7	2.7	4.1	4.1	4.1	4.1	4.1	4.1	4.1
67.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	4.1
70°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	4.1
72.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	4.1
75°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	4.1
77.5°	0.0	0.0	0.0	1.4	1.4	1.4	1.4	2.7	2.7	2.7	4.1
80°	0.0	0.0	0.0	1.4	1.4	1.4	1.4	2.7	2.7	2.7	2.7
82.5°	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	2.7	2.7	2.7
85°	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	2.7	2.7	2.7
87.5°	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	2.7	2.7	2.7
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°	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2
2.5°	456.0	442.3	425.9	408.1	405.4	395.8	382.1	362.9	356.1	342.4	330.0
5°	572.4	535.5	497.1	462.9	451.9	436.9	412.2	378.0	356.1	331.4	310.9
7.5°	728.6	643.6	565.6	504.0	484.8	460.1	421.8	378.0	345.1	310.9	283.5
10°	936.7	764.2	630.0	530.0	498.5	465.6	414.9	361.5	323.2	283.5	254.7
12.5°	1338.0	940.8	690.2	543.7	499.9	457.4	393.0	335.5	291.7	252.0	223.2
15°	1902.2	1276.3	812.1	553.3	486.2	434.1	358.8	299.9	256.1	219.1	191.7
17.5°	2378.8	1594.1	975.1	580.7	476.6	404.0	319.1	258.8	216.4	183.5	161.6
20°	2611.6	1736.5	1049.0	584.8	449.2	358.8	272.5	215.0	178.0	150.6	131.5
22.5°	2584.2	1688.5	980.5	512.2	379.3	302.7	226.0	173.9	142.4	120.5	106.8
25°	2400.7	1480.4	799.8	391.7	295.8	245.1	176.7	135.6	110.9	95.9	84.9
27.5°	2092.5	1188.7	583.4	276.6	224.6	186.2	131.5	104.1	84.9	74.0	67.1
30°	1611.9	760.1	335.5	198.6	163.0	132.8	98.6	75.3	64.4	57.5	52.0
32.5°	831.3	369.8	223.2	142.4	115.0	95.9	68.5	54.8	47.9	43.8	41.1
35°	456.0	262.9	154.7	91.8	74.0	61.6	46.6	38.3	35.6	32.9	32.9
37.5°	313.6	163.0	86.3	54.8	45.2	38.3	31.5	27.4	26.0	26.0	26.0
40°	180.8	86.3	49.3	34.2	28.8	26.0	21.9	20.5	20.5	20.5	21.9
42.5°	93.1	50.7	32.9	23.3	20.5	17.8	15.1	15.1	15.1	16.4	17.8
45°	54.8	34.2	21.9	15.1	13.7	12.3	11.0	11.0	12.3	13.7	15.1
47.5°	34.2	23.3	13.7	9.6	8.2	8.2	8.2	8.2	9.6	11.0	12.3
50°	23.3	12.3	8.2	5.5	5.5	5.5	5.5	6.8	8.2	9.6	11.0
52.5°	12.3	6.8	5.5	4.1	4.1	4.1	5.5	5.5	6.8	8.2	9.6
55°	6.8	5.5	4.1	4.1	4.1	4.1	4.1	5.5	6.8	8.2	9.6
57.5°	5.5	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	6.8	8.2
60°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	6.8	8.2
62.5°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	6.8	6.8
65°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	6.8	6.8
67.5°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	5.5	6.8
70°	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	5.5	5.5	6.8
72.5°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	5.5	5.5
75°	4.1	4.1	4.1	4.1	4.1	5.5	5.5	5.5	5.5	5.5	6.8
77.5°	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	5.5	5.5	5.5
80°	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	5.5	5.5	5.5
82.5°	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	5.5	5.5	5.5
85°	4.1	4.1	4.1	4.1	4.1	5.5	5.5	5.5	5.5	5.5	5.5
87.5°	4.1	4.1	4.1	4.1	4.1	4.1	5.5	5.5	5.5	5.5	5.5
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°	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2
2.5°	323.2	312.2	301.3	301.3	295.8	287.6	284.8	276.6	271.2	268.4	265.7
5°	295.8	279.4	264.3	262.9	256.1	246.5	242.4	234.2	228.7	226.0	224.6
7.5°	264.3	247.9	232.8	230.1	224.6	217.7	213.6	206.8	204.0	201.3	199.9
10°	234.2	217.7	206.8	204.0	199.9	194.5	190.4	186.2	183.5	182.1	182.1
12.5°	204.0	191.7	182.1	179.4	176.7	172.6	169.8	167.1	165.7	165.7	165.7
15°	176.7	165.7	157.5	157.5	154.7	152.0	152.0	149.3	147.9	149.3	150.6
17.5°	149.3	141.1	134.2	134.2	132.8	131.5	131.5	131.5	132.8	134.2	136.9
20°	123.3	116.4	113.7	113.7	112.3	113.7	113.7	115.0	116.4	120.5	124.6
22.5°	100.0	95.9	93.1	94.5	94.5	95.9	97.2	100.0	102.7	106.8	110.9
25°	80.8	78.1	76.7	78.1	79.4	80.8	83.5	86.3	90.4	94.5	100.0
27.5°	64.4	63.0	63.0	64.4	65.7	68.5	72.6	75.3	79.4	83.5	89.0
30°	52.0	50.7	52.0	54.8	56.1	58.9	61.6	65.7	69.8	74.0	79.4
32.5°	41.1	42.5	43.8	45.2	46.6	50.7	53.4	56.1	60.3	64.4	69.8
35°	34.2	35.6	37.0	38.3	39.7	42.5	45.2	47.9	52.0	56.1	61.6
37.5°	27.4	28.8	30.1	32.9	34.2	35.6	39.7	41.1	45.2	47.9	53.4
40°	23.3	24.7	26.0	27.4	28.8	31.5	34.2	35.6	38.3	42.5	46.6
42.5°	19.2	20.5	21.9	23.3	24.7	27.4	28.8	31.5	34.2	37.0	39.7
45°	16.4	17.8	19.2	20.5	21.9	23.3	24.7	27.4	28.8	31.5	34.2
47.5°	13.7	15.1	17.8	17.8	19.2	20.5	21.9	23.3	26.0	27.4	30.1
50°	12.3	13.7	15.1	16.4	16.4	17.8	19.2	20.5	21.9	23.3	26.0
52.5°	11.0	12.3	13.7	13.7	15.1	16.4	17.8	17.8	19.2	20.5	21.9
55°	9.6	11.0	12.3	12.3	13.7	15.1	15.1	16.4	17.8	17.8	19.2
57.5°	9.6	9.6	11.0	11.0	12.3	12.3	13.7	15.1	15.1	16.4	17.8
60°	8.2	9.6	9.6	11.0	11.0	12.3	12.3	13.7	13.7	15.1	15.1
62.5°	8.2	8.2	9.6	9.6	11.0	11.0	12.3	12.3	12.3	13.7	13.7
65°	8.2	8.2	9.6	9.6	9.6	11.0	11.0	11.0	11.0	12.3	12.3
67.5°	6.8	8.2	8.2	9.6	9.6	9.6	9.6	9.6	11.0	11.0	11.0
70°	6.8	8.2	8.2	8.2	8.2	9.6	9.6	9.6	9.6	9.6	9.6
72.5°	6.8	6.8	6.8	6.8	8.2	8.2	8.2	8.2	8.2	8.2	8.2
75°	6.8	6.8	6.8	6.8	6.8	8.2	8.2	8.2	8.2	8.2	8.2
77.5°	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
80°	5.5	5.5	5.5	5.5	5.5	6.8	5.5	5.5	5.5	5.5	5.5
82.5°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	4.1	4.1
85°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	4.1	4.1	4.1	4.1
87.5°	5.5	5.5	5.5	4.1	4.1	4.1	4.1	4.1	4.1	2.7	2.7
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: P182760

CATALOG NUMBER: LDSQA4A28835D010TE LAR35FL 4LSQA1H 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	349.2	349.2	349.2	349.2	349.2	349.2	349.2	349.2
2.5°	261.6	258.8	261.6	258.8	258.8	253.4	257.5	254.7
5°	220.5	217.7	220.5	219.1	216.4	215.0	217.7	216.4
7.5°	197.2	194.5	197.2	197.2	194.5	193.1	195.8	194.5
10°	179.4	178.0	179.4	179.4	178.0	176.7	179.4	178.0
12.5°	164.3	163.0	165.7	165.7	164.3	164.3	167.1	164.3
15°	150.6	150.6	153.4	153.4	153.4	153.4	156.1	154.7
17.5°	136.9	139.7	142.4	143.8	143.8	143.8	146.5	146.5
20°	126.0	128.7	131.5	132.8	134.2	134.2	136.9	136.9
22.5°	113.7	116.4	120.5	121.9	123.3	124.6	127.4	127.4
25°	102.7	105.4	109.6	110.9	113.7	115.0	117.8	117.8
27.5°	91.8	95.9	98.6	101.3	102.7	105.4	108.2	108.2
30°	82.2	86.3	89.0	91.8	93.1	95.9	98.6	98.6
32.5°	72.6	76.7	79.4	82.2	84.9	86.3	90.4	90.4
35°	64.4	67.1	71.2	72.6	75.3	78.1	80.8	80.8
37.5°	56.1	58.9	61.6	64.4	67.1	68.5	71.2	72.6
40°	49.3	52.0	54.8	56.1	58.9	61.6	63.0	64.4
42.5°	42.5	45.2	47.9	49.3	52.0	53.4	56.1	56.1
45°	37.0	39.7	41.1	42.5	45.2	46.6	49.3	49.3
47.5°	31.5	34.2	35.6	37.0	38.3	39.7	42.5	42.5
50°	27.4	28.8	30.1	31.5	32.9	35.6	37.0	37.0
52.5°	23.3	26.0	26.0	27.4	28.8	30.1	31.5	32.9
55°	20.5	21.9	23.3	23.3	24.7	26.0	27.4	28.8
57.5°	17.8	19.2	20.5	20.5	21.9	21.9	23.3	24.7
60°	16.4	16.4	17.8	17.8	17.8	19.2	19.2	20.5
62.5°	13.7	13.7	15.1	15.1	15.1	15.1	15.1	15.1
65°	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3
67.5°	11.0	11.0	11.0	11.0	9.6	9.6	9.6	9.6
70°	9.6	9.6	9.6	9.6	8.2	8.2	8.2	6.8
72.5°	8.2	8.2	8.2	8.2	6.8	6.8	5.5	5.5
75°	6.8	6.8	6.8	6.8	6.8	5.5	5.5	5.5
77.5°	6.8	5.5	5.5	5.5	5.5	5.5	5.5	4.1
80°	5.5	5.5	4.1	4.1	4.1	4.1	4.1	4.1
82.5°	4.1	4.1	4.1	4.1	2.7	2.7	2.7	2.7
85°	4.1	2.7	2.7	2.7	2.7	2.7	2.7	2.7
87.5°	2.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4
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)