

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: P182743

Luminaire Tested: **LDSQA4A09830D010TE LAR35FL 4LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P182743
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: LDSQA4A09830D010TE 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 / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1163.4 lumens
Efficiency: N/A
Efficacy: 84.1 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

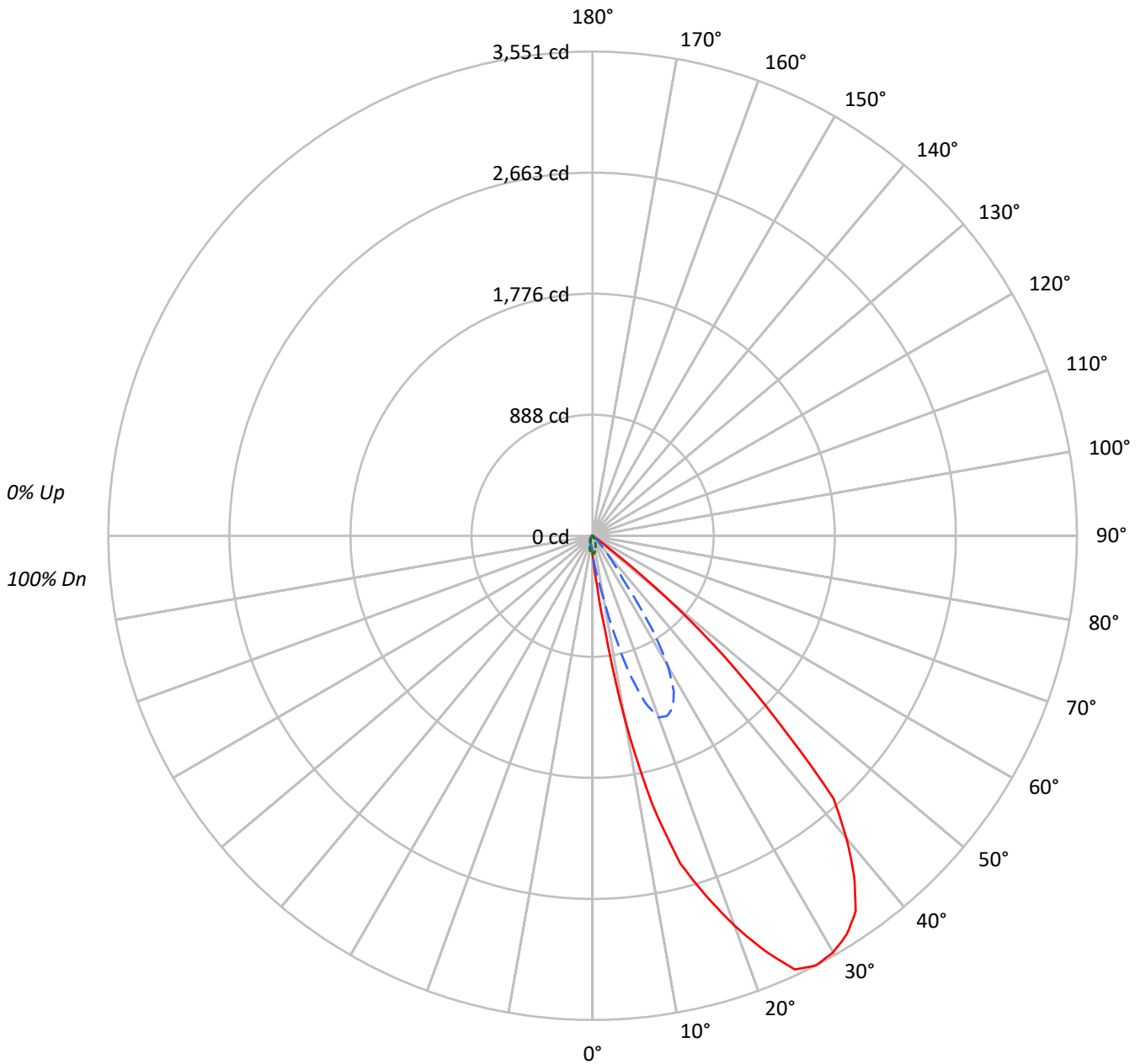
Input Watts (W): 13.84
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P182743

CATALOG NUMBER: LDSQA4A09830D010TE LAR35FL 4LSQA1H 30°

Luminous Intensity Polar Plot





TEST NUMBER: P182743

CATALOG NUMBER: LDSQA4A09830D010TE LAR35FL 4LSQA1H 30°

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°	13156	13156	13156
5°	34580	12525	8178
10°	135583	10840	6807
15°	249609	8545	6038
20°	313649	6041	5485
25°	375163	3987	4896
30°	394515	2506	4284
35°	397707	1514	3713
40°	365968	1012	3162
45°	260373	726	2630
50°	107593	558	2170
55°	6199	540	1892
60°	717	523	1550
65°	252	619	1100
70°	312	595	765
75°	412	786	786
80°	0	1172	893
85°	0	2334	1223



TEST NUMBER: P182743

CATALOG NUMBER: LDSQA4A09830D010TE LAR35FL 4LSQA1H 30°

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	21.3	1.8
10°-20°	170.5	14.7
20°-30°	352.6	30.3
30°-40°	383.8	33.0
40°-50°	210.5	18.1
50°-60°	18.2	1.6
60°-70°	3.0	0.3
70°-80°	2.1	0.2
80°-90°	1.3	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°	544.4	46.8
0°-40°	928.2	79.8
0°-60°	1156.9	99.4
0°-90°	1163.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1163.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	136	136	136	136	136	
5°	356	243	129	89	84	65
15°	2489	1046	85	58	60	695
25°	3510	1392	37	35	46	1585
35°	3363	381	13	20	31	2064
45°	1900	39	5	11	19	1451
55°	37	4	3	7	11	126
65°	1	2	3	4	5	2
75°	1	2	2	3	2	1
85°	0	1	2	2	1	0
90°	0	0	0	0	0	



TEST NUMBER: P182743

CATALOG NUMBER: LDSQA4A09830D010TE LAR35FL 4LSQA1H 30°

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8
2.5°	213.5	206.0	205.0	206.0	200.7	200.2	201.2	197.0	193.2	189.5	186.3
5°	355.6	340.2	335.4	329.0	313.0	307.7	306.6	289.6	273.1	257.7	243.3
7.5°	691.0	660.1	643.6	611.7	562.7	540.9	529.2	473.3	421.1	373.7	330.6
10°	1378.3	1297.3	1258.0	1197.8	1090.8	1038.1	999.8	859.2	720.8	587.7	470.6
12.5°	2011.2	1966.5	1908.5	1876.5	1703.0	1636.5	1573.1	1378.3	1167.5	952.4	738.9
15°	2488.8	2423.3	2361.5	2346.6	2210.3	2132.6	2062.3	1860.6	1609.8	1336.2	1046.1
17.5°	2769.3	2722.5	2663.9	2635.7	2476.0	2413.2	2333.3	2137.9	1894.1	1621.5	1284.6
20°	3042.4	2973.2	2890.7	2848.1	2671.3	2598.9	2508.4	2303.0	2044.8	1755.2	1418.2
22.5°	3292.1	3202.6	3085.5	3019.5	2820.9	2741.1	2639.9	2417.4	2137.9	1806.8	1429.4
25°	3509.8	3428.9	3272.9	3157.4	2923.2	2828.9	2711.3	2478.6	2171.5	1802.5	1391.6
27.5°	3551.3	3497.0	3357.0	3223.4	2958.8	2853.9	2732.0	2491.4	2148.0	1743.5	1289.9
30°	3526.8	3468.3	3356.0	3219.7	2943.9	2838.0	2711.3	2437.1	2056.5	1605.6	1103.6
32.5°	3467.7	3417.2	3283.0	3139.3	2870.4	2760.3	2626.6	2309.9	1899.4	1386.2	811.8
35°	3362.9	3286.7	3124.9	3006.7	2753.9	2640.5	2477.0	2140.1	1664.7	996.6	380.6
37.5°	3149.4	3075.4	2958.8	2849.7	2603.2	2469.6	2297.1	1903.7	1234.0	543.5	235.3
40°	2893.9	2830.0	2728.3	2622.4	2368.4	2214.6	2024.5	1487.9	726.1	306.1	144.8
42.5°	2616.0	2550.0	2435.0	2311.5	2034.7	1872.3	1666.8	963.0	382.8	180.5	78.8
45°	1900.5	1841.4	1757.8	1668.9	1508.7	1391.6	1121.1	505.7	211.9	95.8	38.9
47.5°	1300.5	1230.3	1075.9	889.0	720.8	616.5	463.7	219.3	108.6	47.9	22.9
50°	713.9	639.4	560.6	436.5	292.3	240.1	186.9	105.9	49.0	24.0	12.8
52.5°	175.1	154.9	141.6	130.4	103.3	93.2	78.8	44.2	22.4	13.3	9.1
55°	36.7	34.1	32.5	31.9	29.3	28.2	24.5	17.0	12.2	8.5	4.3
57.5°	10.6	10.1	10.6	10.6	10.6	10.1	10.1	7.5	6.9	4.3	2.7
60°	3.7	3.7	3.7	4.3	4.3	4.3	4.8	4.8	3.7	2.7	2.1
62.5°	1.6	1.6	1.6	2.1	2.1	2.7	2.7	2.7	2.1	2.1	1.6
65°	1.1	1.1	1.1	1.1	1.6	1.6	1.6	1.6	1.6	1.6	1.6
67.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.6
70°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.6
72.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.6
75°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.6
77.5°	0.0	0.0	0.0	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.6
80°	0.0	0.0	0.0	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1
82.5°	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	1.1	1.1	1.1
85°	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	1.1	1.1	1.1
87.5°	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	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: P182743

CATALOG NUMBER: LDSQA4A09830D010TE LAR35FL 4LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8
2.5°	177.3	172.0	165.6	158.6	157.6	153.9	148.5	141.1	138.4	133.1	128.3
5°	222.5	208.2	193.2	179.9	175.7	169.8	160.2	146.9	138.4	128.8	120.8
7.5°	283.2	250.2	219.9	195.9	188.5	178.9	164.0	146.9	134.2	120.8	110.2
10°	364.1	297.1	244.9	206.0	193.8	181.0	161.3	140.5	125.6	110.2	99.0
12.5°	520.1	365.7	268.3	211.3	194.3	177.8	152.8	130.4	113.4	98.0	86.8
15°	739.4	496.2	315.7	215.1	189.0	168.8	139.5	116.6	99.6	85.2	74.5
17.5°	924.7	619.7	379.0	225.7	185.3	157.0	124.0	100.6	84.1	71.3	62.8
20°	1015.2	675.0	407.8	227.3	174.6	139.5	105.9	83.6	69.2	58.6	51.1
22.5°	1004.6	656.4	381.2	199.1	147.5	117.7	87.8	67.6	55.4	46.8	41.5
25°	933.2	575.5	310.9	152.3	115.0	95.3	68.7	52.7	43.1	37.3	33.0
27.5°	813.4	462.1	226.8	107.5	87.3	72.4	51.1	40.5	33.0	28.7	26.1
30°	626.6	295.5	130.4	77.2	63.4	51.6	38.3	29.3	25.0	22.4	20.2
32.5°	323.1	143.7	86.8	55.4	44.7	37.3	26.6	21.3	18.6	17.0	16.0
35°	177.3	102.2	60.2	35.7	28.7	24.0	18.1	14.9	13.8	12.8	12.8
37.5°	121.9	63.4	33.5	21.3	17.6	14.9	12.2	10.6	10.1	10.1	10.1
40°	70.3	33.5	19.2	13.3	11.2	10.1	8.5	8.0	8.0	8.0	8.5
42.5°	36.2	19.7	12.8	9.1	8.0	6.9	5.9	5.9	5.9	6.4	6.9
45°	21.3	13.3	8.5	5.9	5.3	4.8	4.3	4.3	4.8	5.3	5.9
47.5°	13.3	9.1	5.3	3.7	3.2	3.2	3.2	3.2	3.7	4.3	4.8
50°	9.1	4.8	3.2	2.1	2.1	2.1	2.1	2.7	3.2	3.7	4.3
52.5°	4.8	2.7	2.1	1.6	1.6	1.6	2.1	2.1	2.7	3.2	3.7
55°	2.7	2.1	1.6	1.6	1.6	1.6	1.6	2.1	2.7	3.2	3.7
57.5°	2.1	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.7	3.2
60°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.7	3.2
62.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.7	2.7
65°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.7	2.7
67.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.7
70°	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1	2.7
72.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1
75°	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1	2.1	2.7
77.5°	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1	2.1
80°	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1	2.1
82.5°	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1	2.1
85°	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1	2.1	2.1
87.5°	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1	2.1
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: P182743

CATALOG NUMBER: LDSQA4A09830D010TE LAR35FL 4LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8
2.5°	125.6	121.4	117.1	117.1	115.0	111.8	110.7	107.5	105.4	104.3	103.3
5°	115.0	108.6	102.7	102.2	99.6	95.8	94.2	91.0	88.9	87.8	87.3
7.5°	102.7	96.4	90.5	89.4	87.3	84.6	83.0	80.4	79.3	78.3	77.7
10°	91.0	84.6	80.4	79.3	77.7	75.6	74.0	72.4	71.3	70.8	70.8
12.5°	79.3	74.5	70.8	69.7	68.7	67.1	66.0	64.9	64.4	64.4	64.4
15°	68.7	64.4	61.2	61.2	60.2	59.1	59.1	58.0	57.5	58.0	58.6
17.5°	58.0	54.8	52.2	52.2	51.6	51.1	51.1	51.1	51.6	52.2	53.2
20°	47.9	45.3	44.2	44.2	43.7	44.2	44.2	44.7	45.3	46.8	48.4
22.5°	38.9	37.3	36.2	36.7	36.7	37.3	37.8	38.9	39.9	41.5	43.1
25°	31.4	30.3	29.8	30.3	30.9	31.4	32.5	33.5	35.1	36.7	38.9
27.5°	25.0	24.5	24.5	25.0	25.6	26.6	28.2	29.3	30.9	32.5	34.6
30°	20.2	19.7	20.2	21.3	21.8	22.9	24.0	25.6	27.2	28.7	30.9
32.5°	16.0	16.5	17.0	17.6	18.1	19.7	20.8	21.8	23.4	25.0	27.2
35°	13.3	13.8	14.4	14.9	15.4	16.5	17.6	18.6	20.2	21.8	24.0
37.5°	10.6	11.2	11.7	12.8	13.3	13.8	15.4	16.0	17.6	18.6	20.8
40°	9.1	9.6	10.1	10.6	11.2	12.2	13.3	13.8	14.9	16.5	18.1
42.5°	7.5	8.0	8.5	9.1	9.6	10.6	11.2	12.2	13.3	14.4	15.4
45°	6.4	6.9	7.5	8.0	8.5	9.1	9.6	10.6	11.2	12.2	13.3
47.5°	5.3	5.9	6.9	6.9	7.5	8.0	8.5	9.1	10.1	10.6	11.7
50°	4.8	5.3	5.9	6.4	6.4	6.9	7.5	8.0	8.5	9.1	10.1
52.5°	4.3	4.8	5.3	5.3	5.9	6.4	6.9	6.9	7.5	8.0	8.5
55°	3.7	4.3	4.8	4.8	5.3	5.9	5.9	6.4	6.9	6.9	7.5
57.5°	3.7	3.7	4.3	4.3	4.8	4.8	5.3	5.9	5.9	6.4	6.9
60°	3.2	3.7	3.7	4.3	4.3	4.8	4.8	5.3	5.3	5.9	5.9
62.5°	3.2	3.2	3.7	3.7	4.3	4.3	4.8	4.8	4.8	5.3	5.3
65°	3.2	3.2	3.7	3.7	3.7	4.3	4.3	4.3	4.3	4.8	4.8
67.5°	2.7	3.2	3.2	3.7	3.7	3.7	3.7	3.7	4.3	4.3	4.3
70°	2.7	3.2	3.2	3.2	3.2	3.7	3.7	3.7	3.7	3.7	3.7
72.5°	2.7	2.7	2.7	2.7	3.2	3.2	3.2	3.2	3.2	3.2	3.2
75°	2.7	2.7	2.7	2.7	2.7	3.2	3.2	3.2	3.2	3.2	3.2
77.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
80°	2.1	2.1	2.1	2.1	2.1	2.7	2.1	2.1	2.1	2.1	2.1
82.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.6	1.6
85°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.6	1.6	1.6	1.6
87.5°	2.1	2.1	2.1	1.6	1.6	1.6	1.6	1.6	1.6	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: P182743

CATALOG NUMBER: LDSQA4A09830D010TE LAR35FL 4LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	135.8	135.8	135.8	135.8	135.8	135.8	135.8	135.8
2.5°	101.7	100.6	101.7	100.6	100.6	98.5	100.1	99.0
5°	85.7	84.6	85.7	85.2	84.1	83.6	84.6	84.1
7.5°	76.7	75.6	76.7	76.7	75.6	75.1	76.1	75.6
10°	69.7	69.2	69.7	69.7	69.2	68.7	69.7	69.2
12.5°	63.9	63.4	64.4	64.4	63.9	63.9	64.9	63.9
15°	58.6	58.6	59.6	59.6	59.6	59.6	60.7	60.2
17.5°	53.2	54.3	55.4	55.9	55.9	55.9	57.0	57.0
20°	49.0	50.0	51.1	51.6	52.2	52.2	53.2	53.2
22.5°	44.2	45.3	46.8	47.4	47.9	48.4	49.5	49.5
25°	39.9	41.0	42.6	43.1	44.2	44.7	45.8	45.8
27.5°	35.7	37.3	38.3	39.4	39.9	41.0	42.1	42.1
30°	31.9	33.5	34.6	35.7	36.2	37.3	38.3	38.3
32.5°	28.2	29.8	30.9	31.9	33.0	33.5	35.1	35.1
35°	25.0	26.1	27.7	28.2	29.3	30.3	31.4	31.4
37.5°	21.8	22.9	24.0	25.0	26.1	26.6	27.7	28.2
40°	19.2	20.2	21.3	21.8	22.9	24.0	24.5	25.0
42.5°	16.5	17.6	18.6	19.2	20.2	20.8	21.8	21.8
45°	14.4	15.4	16.0	16.5	17.6	18.1	19.2	19.2
47.5°	12.2	13.3	13.8	14.4	14.9	15.4	16.5	16.5
50°	10.6	11.2	11.7	12.2	12.8	13.8	14.4	14.4
52.5°	9.1	10.1	10.1	10.6	11.2	11.7	12.2	12.8
55°	8.0	8.5	9.1	9.1	9.6	10.1	10.6	11.2
57.5°	6.9	7.5	8.0	8.0	8.5	8.5	9.1	9.6
60°	6.4	6.4	6.9	6.9	6.9	7.5	7.5	8.0
62.5°	5.3	5.3	5.9	5.9	5.9	5.9	5.9	5.9
65°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
67.5°	4.3	4.3	4.3	4.3	3.7	3.7	3.7	3.7
70°	3.7	3.7	3.7	3.7	3.2	3.2	3.2	2.7
72.5°	3.2	3.2	3.2	3.2	2.7	2.7	2.1	2.1
75°	2.7	2.7	2.7	2.7	2.7	2.1	2.1	2.1
77.5°	2.7	2.1	2.1	2.1	2.1	2.1	2.1	1.6
80°	2.1	2.1	1.6	1.6	1.6	1.6	1.6	1.6
82.5°	1.6	1.6	1.6	1.6	1.1	1.1	1.1	1.1
85°	1.6	1.1	1.1	1.1	1.1	1.1	1.1	1.1
87.5°	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5
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)