

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: P182655

Luminaire Tested: **LDSQA4A13830D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182655  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26830)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: LDSQA4A13830D010TE LAR15SP 4LSQA1H-LSF-20 30°  
Description: PORTFOLIO 4" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,  
SELF-FLANGED, 15° SPOT WITH SOLITE LENS, 30° Tilt  
Light Source: (1) HIGH LUMEN LED 80CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1432.0 lumens  
Efficiency: N/A  
Efficacy: 64.3 lumens/watt  
Spacing Criteria (0/90/45): 2.28 / 0.64 / 1.15  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

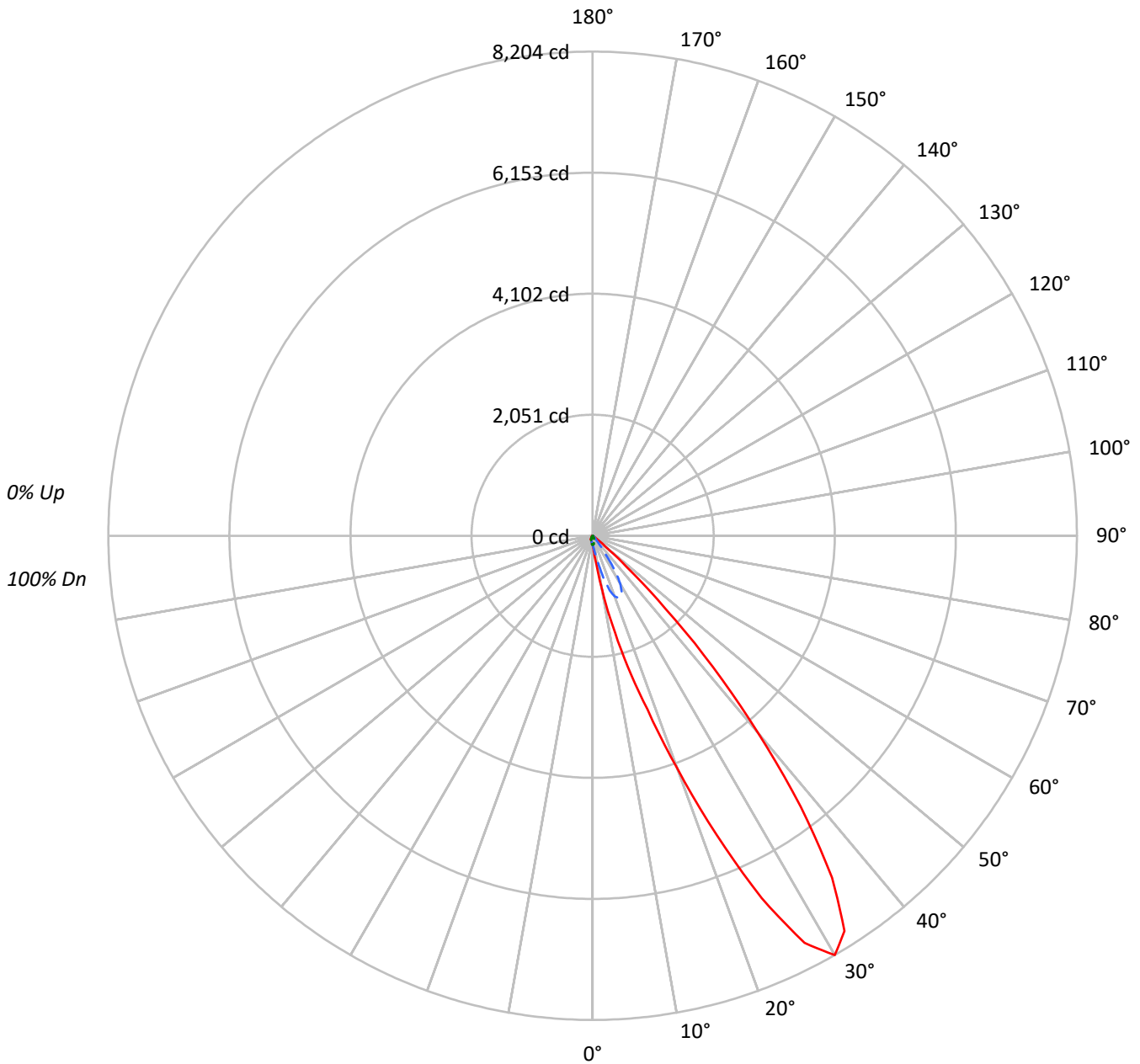
Input Watts (W): 22.27  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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	90	82	76	71	80	75	70	78	73	70	76	72	69	67					67			
5	86	76	69	64	85	75	69	64	73	68	63	72	67	63	70	66	62	60					60			
6	81	70	63	58	79	69	62	57	67	61	57	66	61	57	64	60	56	54					54			
7	75	64	57	52	74	63	57	52	62	56	51	61	55	51	59	55	51	49					49			
8	70	59	52	47	69	58	51	47	57	51	46	56	50	46	55	50	46	44					44			
9	66	54	47	42	65	54	47	42	53	46	42	52	46	42	51	46	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°	14977	14977	14977
5°	28678	14266	11582
10°	93786	12641	9857
15°	229671	10440	8695
20°	432742	7969	7804
25°	724406	5644	6830
30°	917672	3882	5817
35°	836167	2519	4943
40°	550691	1796	4186
45°	238549	1192	3452
50°	42305	829	2848
55°	6790	659	2398
60°	1686	620	1841
65°	550	734	1444
70°	453	906	1105
75°	599	898	898
80°	0	1339	893
85°	0	2668	889



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	19.8	1.4
10°-20°	159.3	11.1
20°-30°	479.8	33.5
30°-40°	546.1	38.1
40°-50°	201.9	14.1
50°-60°	16.0	1.1
60°-70°	4.3	0.3
70°-80°	3.0	0.2
80°-90°	1.8	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°	658.9	46.0
0°-40°	1204.9	84.1
0°-60°	1422.9	99.4
0°-90°	1432.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1432.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	155	155	155	155	155	
5°	295	217	147	123	119	48
15°	2290	774	104	82	87	718
25°	6777	1131	53	51	64	3093
35°	7070	396	21	29	42	4204
45°	1741	46	9	16	25	1474
55°	40	9	4	10	14	66
65°	2	2	3	6	6	3
75°	2	2	2	4	2	1
85°	0	2	2	2	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°	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6
2.5°	198.7	200.3	198.7	195.6	195.6	191.6	190.0	188.5	184.5	182.2	179.0
5°	294.9	290.2	286.3	276.8	273.6	265.0	258.7	250.0	238.2	227.9	216.9
7.5°	504.7	497.6	482.6	454.2	436.9	415.6	399.0	371.4	335.9	306.8	277.6
10°	953.4	922.6	887.2	823.3	776.8	727.1	687.6	613.5	524.4	451.1	380.1
12.5°	1536.2	1538.5	1472.3	1364.3	1278.3	1190.8	1122.9	985.7	828.0	690.0	553.6
15°	2290.0	2246.7	2178.1	2012.5	1840.6	1713.6	1605.6	1397.4	1174.2	972.3	773.6
17.5°	3084.2	3102.3	2942.2	2671.7	2399.7	2209.6	2046.4	1730.9	1466.0	1216.0	973.1
20°	4197.6	4073.0	3844.3	3405.9	2983.2	2708.0	2465.9	2056.6	1686.8	1369.0	1096.1
22.5°	5481.5	5280.4	4815.1	4197.6	3558.1	3177.2	2839.7	2276.6	1827.2	1447.1	1137.9
25°	6777.1	6623.3	5882.1	4959.4	4043.1	3549.4	3112.5	2425.7	1894.2	1465.2	1130.8
27.5°	7777.0	7526.2	6681.7	5479.1	4332.5	3749.7	3239.5	2471.4	1880.0	1421.0	1063.8
30°	8203.6	7886.6	6950.6	5597.4	4334.8	3716.6	3176.4	2380.7	1779.0	1309.1	937.6
32.5°	7940.3	7574.4	6630.4	5270.1	4038.3	3457.9	2932.7	2184.4	1611.9	1133.2	704.2
35°	7070.4	6706.1	5831.6	4624.3	3565.2	3058.1	2601.5	1928.1	1372.9	839.8	395.9
37.5°	5789.8	5479.1	4853.7	3875.9	3004.5	2592.9	2212.8	1624.5	1022.8	481.8	198.7
40°	4354.6	4136.1	3760.8	3073.9	2432.0	2118.9	1813.0	1244.4	621.4	242.1	112.8
42.5°	3018.7	2876.8	2688.3	2274.3	1876.0	1660.8	1415.5	831.2	319.4	133.3	70.2
45°	1741.2	1652.1	1600.0	1423.4	1268.0	1163.2	946.3	447.9	161.7	79.6	46.5
47.5°	768.9	709.7	684.5	610.4	567.8	539.4	428.2	190.8	86.7	51.3	38.6
50°	280.7	280.7	281.5	247.6	202.7	182.2	142.7	84.4	48.9	40.2	28.4
52.5°	99.4	97.8	101.7	96.2	84.4	75.7	63.1	42.6	30.0	25.2	15.8
55°	40.2	38.6	40.2	37.9	35.5	33.1	29.2	22.9	18.9	15.8	8.7
57.5°	18.1	18.1	18.9	18.1	18.1	16.6	15.0	17.3	13.4	8.7	5.5
60°	8.7	8.7	9.5	9.5	9.5	8.7	8.7	9.5	7.9	5.5	3.9
62.5°	3.9	3.9	4.7	4.7	4.7	4.7	4.7	5.5	3.9	3.2	2.4
65°	2.4	1.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
67.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.4	2.4
70°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.4
72.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.4
75°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2.4
77.5°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6	2.4
80°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	1.6	1.6	1.6
82.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	1.6	1.6	1.6
85°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6
87.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6
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°	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6
2.5°	175.9	173.5	168.8	166.4	163.2	160.9	159.3	156.1	153.0	150.6	149.0
5°	206.6	197.9	187.7	179.8	173.5	169.5	163.2	157.7	151.4	146.7	142.7
7.5°	251.6	230.3	207.4	191.6	183.0	175.1	164.0	154.6	145.9	139.6	134.1
10°	321.7	276.0	235.8	205.0	190.0	179.0	161.7	148.3	137.2	128.5	123.0
12.5°	438.5	344.6	273.6	221.6	198.7	182.2	157.7	139.6	126.2	117.5	110.4
15°	598.5	445.6	325.7	241.3	209.0	185.3	151.4	129.3	114.3	104.1	97.8
17.5°	749.2	551.2	384.8	265.0	219.2	186.9	142.7	115.9	100.2	90.7	84.4
20°	843.8	619.8	424.3	278.4	222.4	182.2	130.9	101.7	86.0	77.3	71.0
22.5°	865.9	627.7	421.1	265.8	209.0	168.0	114.3	87.5	72.5	64.7	59.1
25°	833.5	583.6	376.9	229.5	178.2	141.2	95.4	71.0	59.9	52.8	48.9
27.5°	752.3	496.8	298.1	172.7	133.3	104.1	72.5	55.2	48.1	42.6	40.2
30°	606.4	349.3	186.9	107.2	85.2	68.6	52.0	42.6	37.1	34.7	32.3
32.5°	367.5	179.8	98.6	63.9	53.6	46.5	37.9	31.5	28.4	26.8	26.0
35°	175.1	94.6	60.7	43.4	37.9	33.1	27.6	23.7	22.1	21.3	21.3
37.5°	99.4	61.5	41.0	29.2	26.0	22.9	20.5	18.1	17.3	17.3	17.3
40°	63.1	39.4	26.8	21.3	18.9	17.3	15.8	14.2	14.2	14.2	14.2
42.5°	41.0	28.4	20.5	15.8	14.2	13.4	11.8	11.0	11.0	11.0	11.8
45°	32.3	23.7	16.6	12.6	11.0	10.3	9.5	8.7	8.7	8.7	9.5
47.5°	27.6	16.6	11.0	8.7	7.1	7.1	6.3	6.3	6.3	7.1	7.9
50°	16.6	10.3	7.1	5.5	4.7	4.7	4.7	4.7	4.7	5.5	6.3
52.5°	9.5	6.3	4.7	3.9	3.2	3.2	3.2	3.2	3.9	4.7	4.7
55°	6.3	4.7	3.2	3.2	2.4	2.4	2.4	3.2	3.2	3.9	4.7
57.5°	3.9	3.2	2.4	2.4	2.4	2.4	2.4	2.4	3.2	3.9	3.9
60°	3.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	3.2	3.2	3.9
62.5°	2.4	2.4	3.2	2.4	2.4	2.4	2.4	2.4	3.2	3.2	3.9
65°	2.4	2.4	3.2	3.2	2.4	2.4	2.4	2.4	2.4	3.2	3.9
67.5°	2.4	2.4	3.2	3.2	3.2	3.2	2.4	2.4	2.4	3.2	3.2
70°	2.4	3.2	3.2	3.2	3.2	3.2	3.2	2.4	2.4	3.2	3.2
72.5°	2.4	3.2	3.2	3.2	3.2	3.2	3.2	2.4	2.4	3.2	3.2
75°	2.4	2.4	3.2	3.2	3.2	3.2	3.2	2.4	2.4	2.4	3.2
77.5°	2.4	2.4	3.2	3.2	3.2	3.2	3.2	2.4	2.4	2.4	3.2
80°	2.4	2.4	2.4	3.2	2.4	3.2	2.4	2.4	2.4	2.4	2.4
82.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
85°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
87.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	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):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6
2.5°	146.7	145.1	142.7	141.9	142.7	141.9	138.0	137.2	135.6	135.6	135.6
5°	138.8	136.4	133.3	131.7	131.7	130.1	126.2	125.4	123.0	123.0	122.2
7.5°	129.3	126.2	122.2	120.7	120.7	119.1	115.1	113.6	112.0	112.0	111.2
10°	118.3	114.3	110.4	109.6	108.8	106.5	104.1	103.3	100.9	101.7	100.9
12.5°	105.7	102.5	99.4	97.8	97.8	95.4	93.8	93.1	92.3	92.3	92.3
15°	93.8	89.9	86.7	86.0	86.0	85.2	83.6	83.6	82.0	83.6	83.6
17.5°	80.4	77.3	76.5	74.9	75.7	74.9	73.3	74.1	74.1	74.9	75.7
20°	67.8	65.5	64.7	63.9	64.7	64.7	63.9	64.7	65.5	67.8	69.4
22.5°	56.8	55.2	55.2	54.4	55.2	56.0	55.2	56.8	58.4	59.9	62.3
25°	47.3	46.5	46.5	46.5	47.3	48.1	48.9	50.5	51.3	53.6	55.2
27.5°	38.6	38.6	38.6	39.4	40.2	41.0	41.8	44.2	44.9	47.3	48.9
30°	32.3	31.5	32.3	33.1	33.9	35.5	36.3	37.9	38.6	41.0	42.6
32.5°	26.0	26.8	27.6	28.4	29.2	30.0	30.8	32.3	33.9	35.5	37.1
35°	22.1	22.1	22.9	23.7	24.4	26.0	26.8	27.6	29.2	30.8	31.5
37.5°	18.1	18.9	19.7	20.5	21.3	22.1	22.9	23.7	24.4	26.0	27.6
40°	15.0	15.8	16.6	17.3	17.3	18.9	18.9	20.5	21.3	22.9	24.4
42.5°	12.6	13.4	14.2	15.0	15.0	15.8	16.6	17.3	18.1	19.7	21.3
45°	10.3	11.0	11.8	12.6	12.6	13.4	14.2	15.0	15.8	17.3	18.1
47.5°	8.7	9.5	10.3	11.0	11.0	11.8	12.6	13.4	13.4	15.0	15.8
50°	7.1	7.9	8.7	9.5	9.5	10.3	11.0	11.8	11.8	12.6	13.4
52.5°	5.5	6.3	7.9	7.9	8.7	9.5	9.5	10.3	10.3	11.0	11.8
55°	5.5	6.3	7.1	7.1	7.9	8.7	8.7	9.5	9.5	9.5	10.3
57.5°	4.7	5.5	6.3	7.1	7.1	7.9	7.9	7.9	7.9	8.7	8.7
60°	4.7	5.5	5.5	6.3	6.3	7.1	7.1	7.1	7.1	7.9	7.9
62.5°	4.7	4.7	5.5	5.5	6.3	6.3	6.3	7.1	7.1	7.1	7.1
65°	3.9	4.7	5.5	5.5	5.5	6.3	6.3	6.3	6.3	6.3	6.3
67.5°	3.9	4.7	4.7	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
70°	3.9	3.9	4.7	4.7	4.7	5.5	5.5	5.5	4.7	5.5	4.7
72.5°	3.2	3.9	3.9	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
75°	3.2	3.9	3.9	3.9	3.9	4.7	4.7	3.9	3.9	3.9	3.9
77.5°	3.2	3.2	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.2
80°	3.2	3.2	3.2	3.2	3.9	3.9	3.2	3.2	3.2	3.2	3.2
82.5°	2.4	3.2	3.2	3.2	3.2	3.2	3.2	3.2	2.4	2.4	2.4
85°	2.4	2.4	3.2	3.2	3.2	3.2	2.4	2.4	2.4	2.4	1.6
87.5°	2.4	2.4	2.4	3.2	2.4	2.4	2.4	2.4	1.6	1.6	1.6
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: P182655

CATALOG NUMBER: LDSQA4A13830D010TE LAR15SP 4LSQA1H-LSF-20 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	154.6	154.6	154.6	154.6	154.6	154.6	154.6	154.6
2.5°	133.3	132.5	133.3	132.5	132.5	133.3	130.9	132.5
5°	120.7	119.1	119.9	119.1	118.3	119.1	117.5	119.1
7.5°	109.6	108.8	108.8	108.8	108.0	108.8	107.2	108.8
10°	100.2	99.4	99.4	99.4	99.4	100.2	98.6	100.2
12.5°	90.7	90.7	91.5	90.7	91.5	92.3	90.7	92.3
15°	82.8	83.6	84.4	84.4	85.2	86.0	85.2	86.7
17.5°	76.5	77.3	78.9	78.9	79.6	81.2	80.4	82.0
20°	70.2	71.0	72.5	72.5	73.3	74.9	74.1	75.7
22.5°	63.1	64.7	65.5	66.2	67.0	68.6	67.8	69.4
25°	56.0	58.4	59.1	59.9	60.7	62.3	62.3	63.9
27.5°	50.5	52.0	52.8	53.6	55.2	56.8	56.8	57.6
30°	44.2	45.7	47.3	48.1	48.9	50.5	50.5	52.0
32.5°	38.6	40.2	41.0	41.8	43.4	44.9	45.7	46.5
35°	33.1	35.5	36.3	37.9	38.6	41.0	41.0	41.8
37.5°	29.2	30.8	32.3	33.1	34.7	36.3	36.3	37.9
40°	26.0	27.6	28.4	29.2	30.8	32.3	32.3	33.1
42.5°	22.1	24.4	25.2	26.0	26.8	28.4	29.2	30.0
45°	19.7	20.5	21.3	22.1	22.9	24.4	24.4	25.2
47.5°	16.6	17.3	18.1	18.9	19.7	20.5	21.3	22.1
50°	14.2	15.0	15.8	15.8	16.6	18.1	18.1	18.9
52.5°	11.8	12.6	13.4	13.4	14.2	15.8	15.8	16.6
55°	10.3	11.0	11.8	11.8	12.6	13.4	13.4	14.2
57.5°	9.5	9.5	10.3	10.3	11.0	11.0	11.8	11.8
60°	7.9	8.7	8.7	8.7	9.5	9.5	9.5	9.5
62.5°	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.9
65°	6.3	6.3	6.3	6.3	6.3	6.3	5.5	6.3
67.5°	5.5	5.5	5.5	5.5	4.7	4.7	4.7	4.7
70°	4.7	4.7	4.7	4.7	4.7	3.9	3.9	3.9
72.5°	3.9	3.9	3.9	3.9	3.9	3.2	3.2	3.2
75°	3.9	3.9	3.2	3.2	3.2	3.2	3.2	2.4
77.5°	3.2	3.2	3.2	3.2	2.4	2.4	2.4	2.4
80°	2.4	2.4	2.4	2.4	2.4	2.4	1.6	1.6
82.5°	2.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6
85°	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
87.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
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)