

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: P182822

Luminaire Tested: **LDSQA4A28827D010TE LAR25NF 4LSQAL1H 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182822  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26803)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: LDSQA4A28827D010TE LAR25NF 4LSQAL1H 30°  
Description: PORTFOLIO 4" SQUARE LENSED ADJUSTABLE, SELF-FLANGED, 25° NARROW FLOOD, 30° Tilt  
Light Source: (1) HIGH LUMEN LED 80CRI / 2700K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2626.1 lumens  
Efficiency: N/A  
Efficacy: 59.0 lumens/watt  
Spacing Criteria (0/90/45): 2.36 / 0.61 / 1.19  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

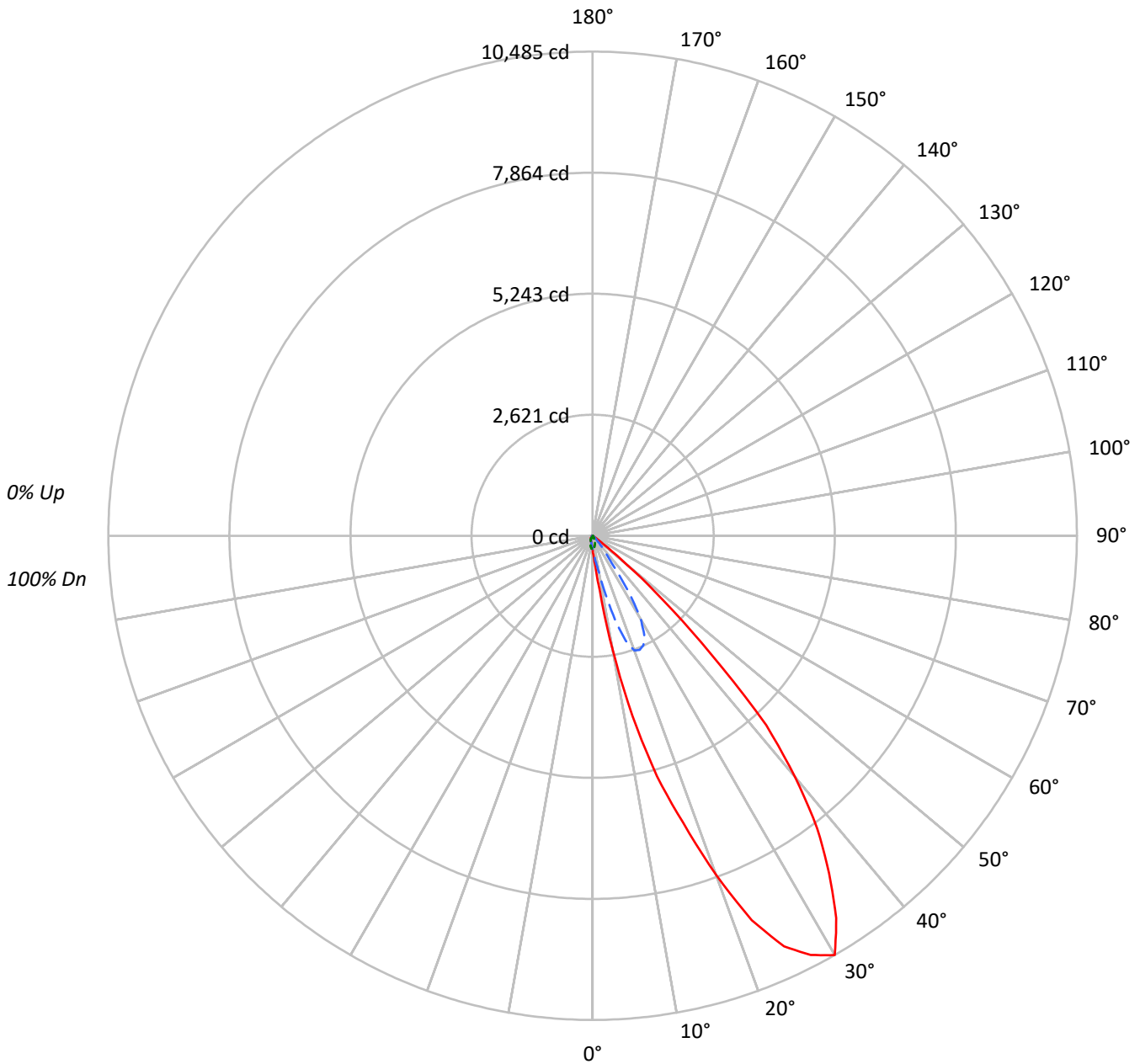
Input Watts (W): 44.49  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	113	109	106	104	110	107	105	102	103	101	99	99	98	96	96	95	93	91					91			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	85	83					83			
3	99	91	86	81	97	90	85	80	87	83	79	85	81	78	82	79	76	75					75			
4	93	84	77	72	91	83	76	72	80	75	71	78	74	70	76	72	69	67					67			
5	87	77	70	65	85	76	69	64	74	68	64	72	67	63	70	66	63	61					61			
6	81	70	63	58	79	69	63	58	68	62	57	66	61	57	65	60	57	55					55			
7	76	65	57	52	74	64	57	52	62	56	52	61	56	52	60	55	51	50					50			
8	71	59	52	47	69	59	52	47	58	51	47	57	51	47	55	50	47	45					45			
9	66	55	48	43	65	54	48	43	53	47	43	52	47	43	51	46	42	41					41			
10	62	51	44	39	61	50	44	39	49	43	39	48	43	39	48	42	39	37					37			

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

	0°	90°	180°
0°	28355	28355	28355
5°	63472	26674	19109
10°	248905	23343	15041
15°	540328	18905	13088
20°	806071	14000	11825
25°	1048433	9866	10294
30°	1172863	6633	8994
35°	1055510	3903	7640
40°	861395	2668	6665
45°	494593	1808	5425
50°	144668	1387	4567
55°	16704	1115	3783
60°	3584	1279	3061
65°	1215	1215	2109
70°	1133	1501	1501
75°	973	1984	1497
80°	0	2957	1450
85°	0	5891	1445



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	41.9	1.6
10°-20°	359.5	13.7
20°-30°	857.6	32.7
30°-40°	905.1	34.5
40°-50°	410.4	15.6
50°-60°	36.0	1.4
60°-70°	7.6	0.3
70°-80°	4.9	0.2
80°-90°	3.1	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°	1259.0	47.9
0°-40°	2164.1	82.4
0°-60°	2610.6	99.4
0°-90°	2626.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2626.1	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	293	293	293	293	293	
5°	653	479	274	211	196	117
15°	5388	1895	188	129	130	1567
25°	9808	2608	92	79	96	4456
35°	8925	720	33	45	65	5512
45°	3610	102	13	25	40	2862
55°	99	16	7	14	22	197
65°	5	5	5	10	9	7
75°	3	3	5	7	4	2
85°	0	3	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°	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7
2.5°	435.1	437.8	425.9	427.2	415.3	420.6	416.7	406.1	398.2	385.0	379.7
5°	652.7	656.6	630.3	622.3	594.7	594.7	582.8	555.1	530.0	499.7	478.6
7.5°	1193.3	1209.1	1130.0	1070.6	983.6	962.5	921.7	826.7	748.9	669.8	610.5
10°	2530.3	2501.2	2337.7	2203.3	1979.1	1896.0	1785.3	1512.4	1261.8	1012.6	817.5
12.5°	3989.9	4083.5	3768.4	3658.9	3304.2	3229.1	2993.1	2547.4	2124.1	1683.8	1293.5
15°	5387.5	5415.2	5139.6	4961.6	4529.1	4431.6	4141.5	3618.0	3048.4	2434.0	1894.7
17.5°	6509.6	6620.3	6215.5	6024.4	5462.7	5305.8	4964.3	4327.4	3693.2	3022.1	2382.6
20°	7818.9	7847.9	7367.9	7000.1	6265.6	6027.0	5618.2	4828.4	4072.9	3306.9	2646.3
22.5°	9009.5	9002.9	8385.8	7866.3	6936.8	6652.0	6147.0	5210.8	4332.7	3433.4	2671.3
25°	9808.5	9829.6	9169.0	8554.6	7414.1	7029.1	6459.5	5409.9	4421.0	3429.5	2608.0
27.5°	10234.4	10213.3	9505.3	8848.6	7589.4	7158.3	6539.9	5416.5	4340.6	3295.0	2418.2
30°	10484.9	10202.8	9447.3	8765.6	7470.8	7027.8	6398.8	5208.2	4072.9	2994.4	2079.3
32.5°	9815.1	9705.7	9047.7	8323.9	7062.0	6623.0	6001.9	4765.2	3648.4	2534.2	1489.9
35°	8925.1	8929.1	8286.9	7610.5	6421.2	6038.9	5398.1	4225.9	3130.2	1761.6	719.9
37.5°	7991.6	8004.8	7394.3	6765.4	5706.6	5304.4	4704.5	3611.4	2252.0	896.6	433.8
40°	6811.5	6839.2	6313.1	5808.1	4831.1	4443.4	3908.1	2733.3	1259.2	501.0	294.0
42.5°	5565.5	5599.8	5133.0	4684.7	3854.1	3535.0	3060.3	1693.0	625.0	324.4	172.7
45°	3610.1	3709.0	3362.2	3173.7	2692.4	2502.6	1997.6	863.6	377.1	189.9	101.5
47.5°	2066.1	2067.5	1774.7	1421.4	1165.6	1013.9	792.4	392.9	220.2	106.8	62.0
50°	959.9	983.6	779.2	648.7	464.1	392.9	323.0	212.3	116.0	62.0	38.2
52.5°	279.5	295.4	267.7	242.6	205.7	183.3	156.9	104.2	60.7	36.9	23.7
55°	98.9	105.5	98.9	92.3	83.1	75.2	67.2	50.1	34.3	22.4	15.8
57.5°	40.9	42.2	40.9	39.6	36.9	36.9	33.0	27.7	21.1	14.5	10.5
60°	18.5	19.8	18.5	19.8	18.5	18.5	18.5	19.8	13.2	9.2	7.9
62.5°	7.9	9.2	9.2	9.2	9.2	10.5	10.5	9.2	7.9	6.6	5.3
65°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
67.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
70°	4.0	4.0	4.0	4.0	4.0	4.0	2.6	2.6	4.0	4.0	4.0
72.5°	4.0	4.0	4.0	4.0	2.6	2.6	2.6	2.6	2.6	4.0	4.0
75°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
77.5°	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	2.6	2.6	2.6
80°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	2.6	2.6	2.6
82.5°	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	2.6	2.6	2.6
85°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	2.6	2.6	2.6
87.5°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	2.6	2.6	2.6
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°	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7
2.5°	373.1	361.3	342.8	331.0	325.7	317.8	312.5	299.3	294.0	283.5	279.5
5°	458.8	435.1	407.4	385.0	370.5	354.7	331.0	304.6	291.4	274.3	265.0
7.5°	556.4	505.0	456.2	416.7	398.2	377.1	346.8	305.9	280.8	258.4	245.2
10°	680.4	574.9	498.4	435.1	407.4	379.7	342.8	295.4	263.7	237.3	222.8
12.5°	970.4	693.5	536.6	445.7	410.1	375.8	329.6	280.8	243.9	213.6	197.8
15°	1396.3	969.1	639.5	454.9	400.8	358.6	305.9	257.1	218.9	188.5	172.7
17.5°	1773.4	1235.5	781.9	489.2	398.2	338.9	276.9	226.8	189.9	160.9	147.7
20°	1979.1	1375.2	876.8	510.3	386.3	308.5	243.9	196.5	160.9	135.8	123.9
22.5°	1983.1	1367.3	842.5	464.1	340.2	267.7	211.0	166.1	134.5	112.1	102.8
25°	1864.4	1219.6	702.8	365.2	278.2	226.8	176.7	138.4	109.4	92.3	84.4
27.5°	1642.9	991.5	516.9	263.7	217.6	183.3	142.4	110.8	85.7	75.2	68.6
30°	1292.2	646.1	301.9	196.5	168.8	141.1	108.1	77.8	67.2	59.3	54.1
32.5°	693.5	313.8	211.0	145.0	120.0	98.9	71.2	56.7	48.8	43.5	42.2
35°	362.6	229.4	141.1	92.3	76.5	64.6	48.8	39.6	35.6	33.0	33.0
37.5°	259.7	143.7	89.7	59.3	50.1	40.9	34.3	29.0	26.4	26.4	26.4
40°	154.3	88.3	54.1	38.2	33.0	29.0	25.1	21.1	21.1	21.1	21.1
42.5°	93.6	55.4	38.2	26.4	23.7	21.1	18.5	17.1	15.8	15.8	17.1
45°	58.0	38.2	25.1	19.8	18.5	15.8	14.5	13.2	13.2	13.2	14.5
47.5°	36.9	27.7	18.5	13.2	11.9	10.5	9.2	9.2	10.5	10.5	11.9
50°	27.7	17.1	11.9	9.2	7.9	7.9	6.6	7.9	7.9	9.2	10.5
52.5°	15.8	10.5	7.9	6.6	6.6	5.3	5.3	6.6	6.6	7.9	9.2
55°	10.5	7.9	6.6	5.3	5.3	5.3	5.3	5.3	6.6	6.6	7.9
57.5°	7.9	6.6	5.3	5.3	5.3	4.0	5.3	5.3	5.3	6.6	7.9
60°	6.6	5.3	5.3	5.3	5.3	4.0	4.0	5.3	5.3	6.6	6.6
62.5°	5.3	5.3	5.3	5.3	5.3	4.0	5.3	5.3	5.3	5.3	6.6
65°	4.0	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	6.6
67.5°	4.0	4.0	5.3	5.3	5.3	4.0	5.3	5.3	5.3	5.3	6.6
70°	4.0	4.0	4.0	5.3	5.3	4.0	5.3	5.3	5.3	5.3	5.3
72.5°	4.0	4.0	4.0	5.3	5.3	4.0	5.3	5.3	5.3	5.3	5.3
75°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.3	5.3	5.3
77.5°	4.0	4.0	4.0	4.0	5.3	4.0	5.3	5.3	5.3	5.3	5.3
80°	4.0	4.0	4.0	4.0	4.0	4.0	5.3	5.3	5.3	5.3	5.3
82.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.3	5.3	5.3	5.3
85°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.3	5.3	5.3	5.3
87.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.3	5.3	5.3
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°	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7
2.5°	269.0	265.0	257.1	255.8	254.5	249.2	245.2	241.3	241.3	237.3	234.7
5°	249.2	242.6	233.4	229.4	228.1	221.5	216.2	212.3	211.0	207.0	203.1
7.5°	228.1	220.2	209.6	205.7	204.4	197.8	192.5	188.5	185.9	182.0	179.3
10°	205.7	196.5	187.2	183.3	182.0	175.4	171.4	167.5	164.8	162.2	159.5
12.5°	182.0	174.0	164.8	160.9	159.5	154.3	150.3	147.7	146.4	143.7	142.4
15°	158.2	150.3	142.4	139.8	138.4	134.5	131.9	130.5	129.2	129.2	127.9
17.5°	134.5	127.9	121.3	120.0	118.7	116.0	114.7	113.4	114.7	114.7	116.0
20°	112.1	106.8	101.5	101.5	100.2	98.9	98.9	98.9	101.5	102.8	105.5
22.5°	92.3	88.3	84.4	84.4	84.4	84.4	84.4	87.0	89.7	92.3	93.6
25°	76.5	72.5	71.2	71.2	71.2	72.5	73.8	76.5	79.1	81.7	84.4
27.5°	62.0	59.3	59.3	59.3	60.7	62.0	63.3	65.9	69.9	72.5	75.2
30°	50.1	48.8	48.8	50.1	51.4	52.7	55.4	58.0	60.7	63.3	65.9
32.5°	39.6	40.9	40.9	42.2	43.5	44.8	47.5	50.1	52.7	55.4	56.7
35°	33.0	33.0	34.3	35.6	36.9	38.2	40.9	43.5	44.8	47.5	50.1
37.5°	26.4	27.7	29.0	30.3	31.6	33.0	34.3	36.9	38.2	40.9	43.5
40°	22.4	23.7	25.1	26.4	26.4	29.0	29.0	31.6	33.0	35.6	38.2
42.5°	18.5	19.8	21.1	22.4	22.4	23.7	25.1	26.4	29.0	30.3	33.0
45°	14.5	15.8	17.1	18.5	19.8	21.1	21.1	23.7	25.1	26.4	29.0
47.5°	13.2	14.5	15.8	15.8	17.1	18.5	18.5	21.1	22.4	23.7	25.1
50°	10.5	11.9	13.2	14.5	14.5	15.8	17.1	18.5	19.8	21.1	21.1
52.5°	9.2	10.5	11.9	11.9	13.2	14.5	14.5	15.8	17.1	17.1	18.5
55°	9.2	10.5	10.5	11.9	11.9	13.2	13.2	14.5	14.5	15.8	15.8
57.5°	7.9	9.2	9.2	10.5	10.5	11.9	11.9	13.2	13.2	13.2	14.5
60°	7.9	7.9	9.2	9.2	10.5	10.5	10.5	11.9	11.9	11.9	13.2
62.5°	6.6	7.9	7.9	9.2	9.2	9.2	10.5	10.5	10.5	11.9	11.9
65°	6.6	7.9	7.9	9.2	9.2	9.2	9.2	9.2	10.5	10.5	10.5
67.5°	6.6	6.6	7.9	7.9	7.9	7.9	9.2	9.2	9.2	9.2	9.2
70°	6.6	6.6	6.6	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
72.5°	5.3	6.6	6.6	6.6	6.6	7.9	7.9	7.9	7.9	7.9	6.6
75°	5.3	5.3	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
77.5°	5.3	5.3	5.3	6.6	6.6	6.6	6.6	6.6	6.6	5.3	5.3
80°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	4.0
82.5°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	4.0	4.0	4.0
85°	5.3	4.0	5.3	5.3	5.3	4.0	4.0	4.0	4.0	4.0	2.6
87.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.6	2.6
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: P182822

CATALOG NUMBER: LDSQA4A28827D010TE LAR25NF 4LSQAL1H 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	292.7	292.7	292.7	292.7	292.7	292.7	292.7	292.7
2.5°	232.1	229.4	230.7	230.7	228.1	226.8	226.8	228.1
5°	200.4	197.8	199.1	199.1	196.5	195.1	195.1	196.5
7.5°	176.7	174.0	175.4	175.4	172.7	172.7	172.7	172.7
10°	158.2	156.9	156.9	156.9	154.3	155.6	154.3	152.9
12.5°	141.1	141.1	141.1	141.1	139.8	141.1	139.8	139.8
15°	127.9	127.9	129.2	129.2	129.2	130.5	130.5	130.5
17.5°	117.3	118.7	120.0	121.3	121.3	122.6	122.6	122.6
20°	106.8	109.4	110.8	112.1	112.1	114.7	113.4	114.7
22.5°	96.3	98.9	100.2	101.5	102.8	104.2	104.2	105.5
25°	87.0	89.7	91.0	92.3	93.6	96.3	96.3	96.3
27.5°	77.8	80.4	81.7	84.4	85.7	88.3	88.3	88.3
30°	68.6	71.2	72.5	73.8	76.5	79.1	79.1	80.4
32.5°	59.3	63.3	64.6	65.9	68.6	71.2	72.5	72.5
35°	52.7	55.4	56.7	59.3	60.7	64.6	64.6	64.6
37.5°	46.1	48.8	51.4	52.7	54.1	56.7	58.0	59.3
40°	40.9	43.5	44.8	46.1	48.8	51.4	52.7	52.7
42.5°	35.6	38.2	39.6	40.9	42.2	44.8	44.8	44.8
45°	31.6	33.0	34.3	35.6	36.9	38.2	39.6	39.6
47.5°	26.4	29.0	29.0	30.3	31.6	34.3	34.3	35.6
50°	22.4	25.1	25.1	26.4	27.7	29.0	30.3	30.3
52.5°	19.8	21.1	22.4	22.4	23.7	25.1	26.4	26.4
55°	17.1	18.5	18.5	19.8	19.8	21.1	22.4	22.4
57.5°	14.5	15.8	17.1	17.1	17.1	18.5	18.5	19.8
60°	13.2	14.5	14.5	14.5	14.5	15.8	15.8	15.8
62.5°	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9
65°	10.5	10.5	10.5	10.5	9.2	9.2	9.2	9.2
67.5°	9.2	9.2	9.2	9.2	7.9	7.9	7.9	7.9
70°	7.9	7.9	7.9	7.9	6.6	6.6	6.6	5.3
72.5°	6.6	6.6	6.6	6.6	6.6	5.3	5.3	5.3
75°	6.6	5.3	5.3	5.3	5.3	5.3	4.0	4.0
77.5°	5.3	5.3	5.3	4.0	4.0	4.0	4.0	4.0
80°	4.0	4.0	4.0	4.0	4.0	2.6	2.6	2.6
82.5°	4.0	2.6	2.6	2.6	2.6	2.6	2.6	2.6
85°	2.6	2.6	2.6	2.6	1.3	1.3	1.3	1.3
87.5°	2.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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















(END OF REPORT)