

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: P182652

Luminaire Tested: **LDSQA4A09935D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P182652  
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: LDSQA4A09935D010TE 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 90CRI / 3500K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 803.2 lumens  
Efficiency: N/A  
Efficacy: 58.0 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

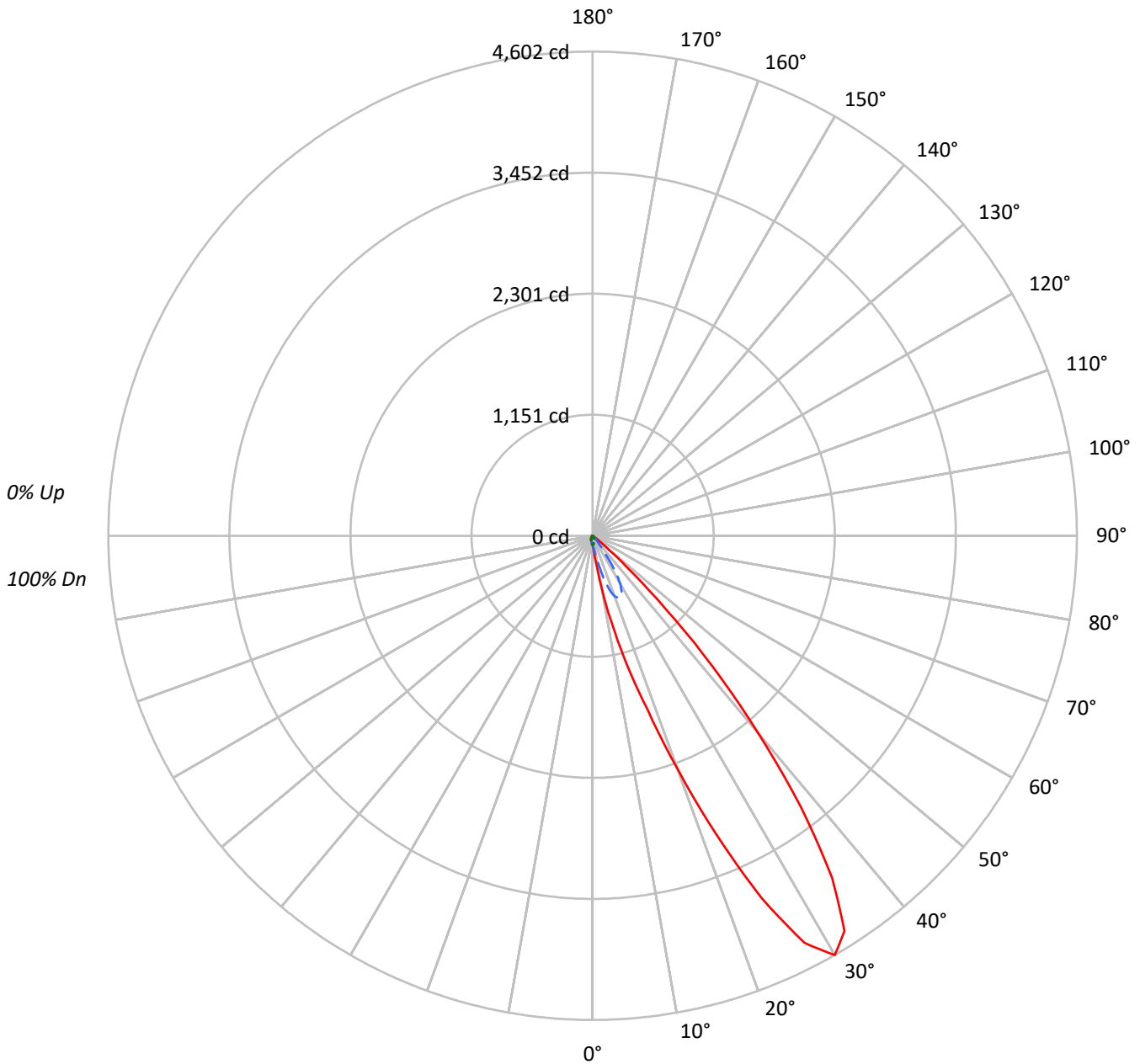
Input Watts (W): 13.84  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20									20									20									20									
RC	80									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	0																
RCR																																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100																			
1	112	109	106	104	110	107	105	102	103	101	99	99	98	96	96	94	93	91																			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	84	83																			
3	99	91	85	81	97	90	84	80	87	83	79	85	81	77	82	79	76	74																			
4	92	83	77	72	90	82	76	71	80	75	70	78	73	70	76	72	69	67																			
5	86	76	69	64	85	75	69	64	73	68	63	72	67	63	70	66	62	60																			
6	81	70	63	58	79	69	62	57	67	61	57	66	61	57	64	60	56	54																			
7	75	64	57	52	74	63	57	52	62	56	51	61	55	51	59	55	51	49																			
8	70	59	52	47	69	58	51	47	57	51	46	56	50	46	55	50	46	44																			
9	66	54	47	42	65	54	47	42	53	46	42	52	46	42	51	46	42	40																			
10	62	50	43	38	60	50	43	38	49	42	38	48	42	38	47	42	38	36																			

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

	0°	90°	180°
0°	8399	8399	8399
5°	16084	8003	6496
10°	52608	7092	5528
15°	128836	5857	4884
20°	242742	4464	4381
25°	406343	3164	3827
30°	514756	2181	3266
35°	469043	1407	2767
40°	308896	1012	2352
45°	133810	671	1945
50°	23737	467	1598
55°	3817	372	1351
60°	949	349	1027
65°	298	413	802
70°	255	510	623
75°	337	487	487
80°	0	725	502
85°	0	1445	445



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	11.1	1.4
10°-20°	89.3	11.1
20°-30°	269.1	33.5
30°-40°	306.3	38.1
40°-50°	113.3	14.1
50°-60°	9.0	1.1
60°-70°	2.4	0.3
70°-80°	1.7	0.2
80°-90°	1.0	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°	369.6	46.0
0°-40°	675.9	84.1
0°-60°	798.1	99.4
0°-90°	803.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	803.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	87	87	87	87	87	
5°	165	122	82	69	67	27
15°	1285	434	58	46	49	403
25°	3802	634	30	29	36	1735
35°	3966	222	12	16	23	2358
45°	977	26	5	9	14	827
55°	23	5	2	5	8	37
65°	1	1	2	4	4	2
75°	1	1	1	2	1	1
85°	0	1	1	1	0	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°	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7
2.5°	111.5	112.4	111.5	109.7	109.7	107.5	106.6	105.7	103.5	102.2	100.4
5°	165.4	162.8	160.6	155.3	153.5	148.6	145.1	140.2	133.6	127.8	121.6
7.5°	283.1	279.1	270.7	254.8	245.1	233.1	223.8	208.3	188.4	172.1	155.7
10°	534.8	517.5	497.6	461.8	435.7	407.8	385.7	344.1	294.2	253.0	213.2
12.5°	861.7	863.0	825.9	765.3	717.0	667.9	629.9	552.9	464.5	387.1	310.5
15°	1284.6	1260.2	1221.8	1128.9	1032.4	961.2	900.6	783.8	658.7	545.4	433.9
17.5°	1730.0	1740.2	1650.4	1498.7	1346.1	1239.5	1147.9	970.9	822.3	682.1	545.9
20°	2354.6	2284.7	2156.4	1910.5	1673.4	1519.0	1383.2	1153.6	946.2	767.9	614.9
22.5°	3074.7	2961.9	2701.0	2354.6	1995.9	1782.2	1592.9	1277.0	1024.9	811.7	638.3
25°	3801.5	3715.3	3299.5	2781.9	2267.9	1991.0	1745.9	1360.7	1062.5	821.9	634.3
27.5°	4362.4	4221.7	3748.0	3073.4	2430.2	2103.4	1817.2	1386.3	1054.6	797.1	596.7
30°	4601.7	4423.9	3898.8	3139.8	2431.6	2084.8	1781.8	1335.4	997.9	734.3	525.9
32.5°	4454.0	4248.7	3719.2	2956.2	2265.2	1939.7	1645.1	1225.3	904.2	635.6	395.0
35°	3966.1	3761.7	3271.1	2593.9	1999.8	1715.4	1459.3	1081.5	770.1	471.1	222.1
37.5°	3247.7	3073.4	2722.6	2174.1	1685.3	1454.4	1241.2	911.2	573.7	270.3	111.5
40°	2442.6	2320.1	2109.5	1724.3	1364.2	1188.6	1017.0	698.0	348.6	135.8	63.3
42.5°	1693.3	1613.7	1508.0	1275.7	1052.3	931.6	794.0	466.2	179.1	74.8	39.4
45°	976.7	926.7	897.5	798.4	711.3	652.5	530.8	251.3	90.7	44.7	26.1
47.5°	431.3	398.1	384.0	342.4	318.5	302.6	240.2	107.0	48.7	28.8	21.7
50°	157.5	157.5	157.9	138.9	113.7	102.2	80.1	47.3	27.4	22.6	15.9
52.5°	55.7	54.9	57.1	54.0	47.3	42.5	35.4	23.9	16.8	14.2	8.8
55°	22.6	21.7	22.6	21.2	19.9	18.6	16.4	12.8	10.6	8.8	4.9
57.5°	10.2	10.2	10.6	10.2	10.2	9.3	8.4	9.7	7.5	4.9	3.1
60°	4.9	4.9	5.3	5.3	5.3	4.9	4.9	5.3	4.4	3.1	2.2
62.5°	2.2	2.2	2.7	2.7	2.7	2.7	2.7	3.1	2.2	1.8	1.3
65°	1.3	0.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
67.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3	1.3
70°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
72.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
75°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.3
77.5°	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.9	1.3
80°	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.9	0.9	0.9
82.5°	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.9	0.9	0.9
85°	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.9
87.5°	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.4	0.9	0.9
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°	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7
2.5°	98.6	97.3	94.7	93.3	91.6	90.2	89.4	87.6	85.8	84.5	83.6
5°	115.9	111.0	105.3	100.9	97.3	95.1	91.6	88.5	84.9	82.3	80.1
7.5°	141.1	129.2	116.3	107.5	102.6	98.2	92.0	86.7	81.8	78.3	75.2
10°	180.5	154.8	132.3	115.0	106.6	100.4	90.7	83.2	77.0	72.1	69.0
12.5°	245.9	193.3	153.5	124.3	111.5	102.2	88.5	78.3	70.8	65.9	61.9
15°	335.7	249.9	182.7	135.4	117.2	104.0	84.9	72.5	64.1	58.4	54.9
17.5°	420.2	309.2	215.9	148.6	123.0	104.8	80.1	65.0	56.2	50.9	47.3
20°	473.3	347.7	238.0	156.1	124.7	102.2	73.4	57.1	48.2	43.3	39.8
22.5°	485.7	352.1	236.2	149.1	117.2	94.2	64.1	49.1	40.7	36.3	33.2
25°	467.6	327.3	211.4	128.7	100.0	79.2	53.5	39.8	33.6	29.6	27.4
27.5°	422.0	278.7	167.2	96.9	74.8	58.4	40.7	31.0	27.0	23.9	22.6
30°	340.2	196.0	104.8	60.2	47.8	38.5	29.2	23.9	20.8	19.5	18.1
32.5°	206.1	100.9	55.3	35.8	30.1	26.1	21.2	17.7	15.9	15.0	14.6
35°	98.2	53.1	34.1	24.3	21.2	18.6	15.5	13.3	12.4	11.9	11.9
37.5°	55.7	34.5	23.0	16.4	14.6	12.8	11.5	10.2	9.7	9.7	9.7
40°	35.4	22.1	15.0	11.9	10.6	9.7	8.8	8.0	8.0	8.0	8.0
42.5°	23.0	15.9	11.5	8.8	8.0	7.5	6.6	6.2	6.2	6.2	6.6
45°	18.1	13.3	9.3	7.1	6.2	5.8	5.3	4.9	4.9	4.9	5.3
47.5°	15.5	9.3	6.2	4.9	4.0	4.0	3.5	3.5	3.5	4.0	4.4
50°	9.3	5.8	4.0	3.1	2.7	2.7	2.7	2.7	2.7	3.1	3.5
52.5°	5.3	3.5	2.7	2.2	1.8	1.8	1.8	1.8	2.2	2.7	2.7
55°	3.5	2.7	1.8	1.8	1.3	1.3	1.3	1.8	1.8	2.2	2.7
57.5°	2.2	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.8	2.2	2.2
60°	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.8	1.8	2.2
62.5°	1.3	1.3	1.8	1.3	1.3	1.3	1.3	1.3	1.8	1.8	2.2
65°	1.3	1.3	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.8	2.2
67.5°	1.3	1.3	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.8	1.8
70°	1.3	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.8	1.8
72.5°	1.3	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.8	1.8
75°	1.3	1.3	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.8
77.5°	1.3	1.3	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.8
80°	1.3	1.3	1.3	1.8	1.3	1.8	1.3	1.3	1.3	1.3	1.3
82.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
85°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
87.5°	1.3	1.3	1.3	1.3	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	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°	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7
2.5°	82.3	81.4	80.1	79.6	80.1	79.6	77.4	77.0	76.1	76.1	76.1
5°	77.9	76.5	74.8	73.9	73.9	73.0	70.8	70.3	69.0	69.0	68.6
7.5°	72.5	70.8	68.6	67.7	67.7	66.8	64.6	63.7	62.8	62.8	62.4
10°	66.4	64.1	61.9	61.5	61.0	59.7	58.4	57.9	56.6	57.1	56.6
12.5°	59.3	57.5	55.7	54.9	54.9	53.5	52.6	52.2	51.8	51.8	51.8
15°	52.6	50.4	48.7	48.2	48.2	47.8	46.9	46.9	46.0	46.9	46.9
17.5°	45.1	43.3	42.9	42.0	42.5	42.0	41.1	41.6	41.6	42.0	42.5
20°	38.0	36.7	36.3	35.8	36.3	36.3	35.8	36.3	36.7	38.0	38.9
22.5°	31.8	31.0	31.0	30.5	31.0	31.4	31.0	31.8	32.7	33.6	34.9
25°	26.5	26.1	26.1	26.1	26.5	27.0	27.4	28.3	28.8	30.1	31.0
27.5°	21.7	21.7	21.7	22.1	22.6	23.0	23.4	24.8	25.2	26.5	27.4
30°	18.1	17.7	18.1	18.6	19.0	19.9	20.3	21.2	21.7	23.0	23.9
32.5°	14.6	15.0	15.5	15.9	16.4	16.8	17.3	18.1	19.0	19.9	20.8
35°	12.4	12.4	12.8	13.3	13.7	14.6	15.0	15.5	16.4	17.3	17.7
37.5°	10.2	10.6	11.1	11.5	11.9	12.4	12.8	13.3	13.7	14.6	15.5
40°	8.4	8.8	9.3	9.7	9.7	10.6	10.6	11.5	11.9	12.8	13.7
42.5°	7.1	7.5	8.0	8.4	8.4	8.8	9.3	9.7	10.2	11.1	11.9
45°	5.8	6.2	6.6	7.1	7.1	7.5	8.0	8.4	8.8	9.7	10.2
47.5°	4.9	5.3	5.8	6.2	6.2	6.6	7.1	7.5	7.5	8.4	8.8
50°	4.0	4.4	4.9	5.3	5.3	5.8	6.2	6.6	6.6	7.1	7.5
52.5°	3.1	3.5	4.4	4.4	4.9	5.3	5.3	5.8	5.8	6.2	6.6
55°	3.1	3.5	4.0	4.0	4.4	4.9	4.9	5.3	5.3	5.3	5.8
57.5°	2.7	3.1	3.5	4.0	4.0	4.4	4.4	4.4	4.4	4.9	4.9
60°	2.7	3.1	3.1	3.5	3.5	4.0	4.0	4.0	4.0	4.4	4.4
62.5°	2.7	2.7	3.1	3.1	3.5	3.5	3.5	4.0	4.0	4.0	4.0
65°	2.2	2.7	3.1	3.1	3.1	3.5	3.5	3.5	3.5	3.5	3.5
67.5°	2.2	2.7	2.7	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
70°	2.2	2.2	2.7	2.7	2.7	3.1	3.1	3.1	2.7	3.1	2.7
72.5°	1.8	2.2	2.2	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
75°	1.8	2.2	2.2	2.2	2.2	2.7	2.7	2.2	2.2	2.2	2.2
77.5°	1.8	1.8	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	1.8
80°	1.8	1.8	1.8	1.8	2.2	2.2	1.8	1.8	1.8	1.8	1.8
82.5°	1.3	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3
85°	1.3	1.3	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3	0.9
87.5°	1.3	1.3	1.3	1.8	1.3	1.3	1.3	1.3	0.9	0.9	0.9
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: P182652

CATALOG NUMBER: LDSQA4A09935D010TE LAR15SP 4LSQA1H-LSF-20 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	86.7	86.7	86.7	86.7	86.7	86.7	86.7	86.7
2.5°	74.8	74.3	74.8	74.3	74.3	74.8	73.4	74.3
5°	67.7	66.8	67.2	66.8	66.4	66.8	65.9	66.8
7.5°	61.5	61.0	61.0	61.0	60.6	61.0	60.2	61.0
10°	56.2	55.7	55.7	55.7	55.7	56.2	55.3	56.2
12.5°	50.9	50.9	51.3	50.9	51.3	51.8	50.9	51.8
15°	46.4	46.9	47.3	47.3	47.8	48.2	47.8	48.7
17.5°	42.9	43.3	44.2	44.2	44.7	45.6	45.1	46.0
20°	39.4	39.8	40.7	40.7	41.1	42.0	41.6	42.5
22.5°	35.4	36.3	36.7	37.2	37.6	38.5	38.0	38.9
25°	31.4	32.7	33.2	33.6	34.1	34.9	34.9	35.8
27.5°	28.3	29.2	29.6	30.1	31.0	31.8	31.8	32.3
30°	24.8	25.7	26.5	27.0	27.4	28.3	28.3	29.2
32.5°	21.7	22.6	23.0	23.4	24.3	25.2	25.7	26.1
35°	18.6	19.9	20.3	21.2	21.7	23.0	23.0	23.4
37.5°	16.4	17.3	18.1	18.6	19.5	20.3	20.3	21.2
40°	14.6	15.5	15.9	16.4	17.3	18.1	18.1	18.6
42.5°	12.4	13.7	14.2	14.6	15.0	15.9	16.4	16.8
45°	11.1	11.5	11.9	12.4	12.8	13.7	13.7	14.2
47.5°	9.3	9.7	10.2	10.6	11.1	11.5	11.9	12.4
50°	8.0	8.4	8.8	8.8	9.3	10.2	10.2	10.6
52.5°	6.6	7.1	7.5	7.5	8.0	8.8	8.8	9.3
55°	5.8	6.2	6.6	6.6	7.1	7.5	7.5	8.0
57.5°	5.3	5.3	5.8	5.8	6.2	6.2	6.6	6.6
60°	4.4	4.9	4.9	4.9	5.3	5.3	5.3	5.3
62.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.4
65°	3.5	3.5	3.5	3.5	3.5	3.5	3.1	3.5
67.5°	3.1	3.1	3.1	3.1	2.7	2.7	2.7	2.7
70°	2.7	2.7	2.7	2.7	2.7	2.2	2.2	2.2
72.5°	2.2	2.2	2.2	2.2	2.2	1.8	1.8	1.8
75°	2.2	2.2	1.8	1.8	1.8	1.8	1.8	1.3
77.5°	1.8	1.8	1.8	1.8	1.3	1.3	1.3	1.3
80°	1.3	1.3	1.3	1.3	1.3	1.3	0.9	0.9
82.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
85°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
87.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
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)