

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: P182663

Luminaire Tested: **LDSQA4A28830D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P182663
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: LDSQA4A28830D010TE 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: 2443.3 lumens
Efficiency: N/A
Efficacy: 54.9 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

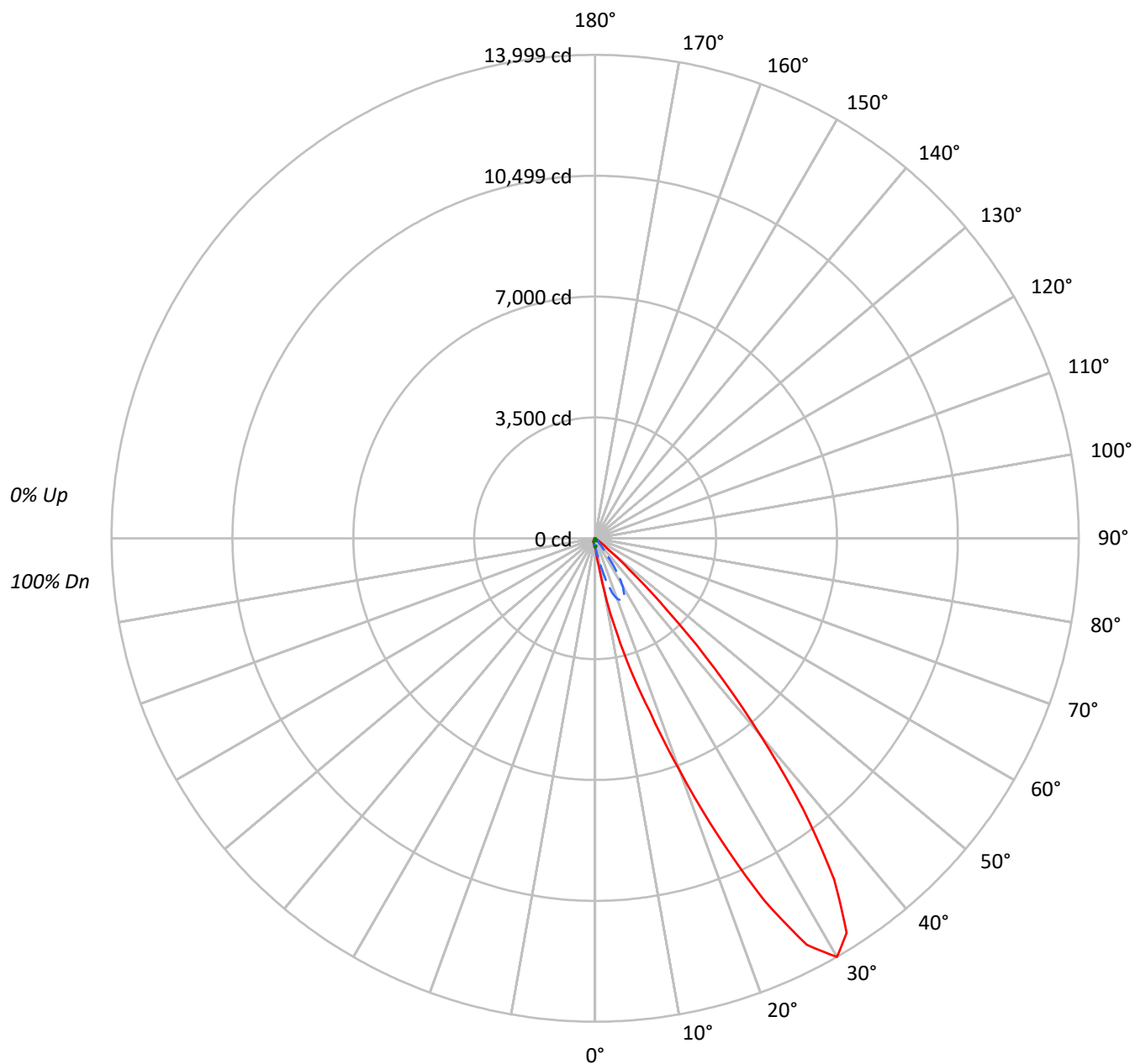
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50
RCR																	
0	119	119	119	119	116	116	116	116	111	111	111		106	106	106		102
1	112	109	106	104	110	107	105	102	103	101	99		99	98	96		96
2	106	100	95	91	103	98	94	90	95	91	88		92	89	86		89
3	99	91	85	81	97	90	84	80	87	83	79		85	81	77		82
4	92	83	77	72	90	82	76	71	80	75	70		78	73	70		76
5	86	76	69	64	85	75	69	64	73	68	63		72	67	63		70
6	81	70	63	58	79	69	62	57	67	61	57		66	61	57		64
7	75	64	57	52	74	63	57	52	62	56	51		61	55	51		59
8	70	59	52	47	69	58	51	47	57	51	46		56	50	46		55
9	66	54	47	42	65	54	47	42	53	46	42		52	46	42		51
10	62	50	43	38	60	50	43	38	49	42	38		48	42	38		47

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	25546	25546	25546
5°	48944	24341	19760
10°	160038	21573	16811
15°	391914	17812	14843
20°	738432	13598	13320
25°	1236110	9641	11651
30°	1565913	6622	9933
35°	1426832	4293	8432
40°	939688	3060	7145
45°	407062	2028	5905
50°	72191	1417	4868
55°	11586	1132	4087
60°	2868	1046	3119
65°	917	1238	2476
70°	765	1530	1898
75°	1011	1497	1497
80°	0	2232	1506
85°	0	4446	1445



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	33.8	1.4
10°-20°	271.8	11.1
20°-30°	818.7	33.5
30°-40°	931.8	38.1
40°-50°	344.5	14.1
50°-60°	27.4	1.1
60°-70°	7.4	0.3
70°-80°	5.1	0.2
80°-90°	2.9	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°	1124.3	46.0
0°-40°	2056.1	84.1
0°-60°	2427.9	99.4
0°-90°	2443.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2443.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	264	264	264	264	264	
5°	503	370	250	210	203	82
15°	3908	1320	178	140	148	1225
25°	11564	1930	90	88	109	5279
35°	12065	676	36	50	71	7173
45°	2971	79	15	27	43	2516
55°	69	15	7	16	24	112
65°	4	4	5	11	11	5
75°	3	4	4	7	4	2
85°	0	3	4	4	1	0
90°	0	0	0	0	0	



TEST NUMBER: P182663

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7
2.5°	339.1	341.8	339.1	333.7	333.7	327.0	324.3	321.6	314.9	310.8	305.5
5°	503.3	495.2	488.5	472.3	466.9	452.1	441.4	426.6	406.4	388.9	370.0
7.5°	861.2	849.1	823.5	775.1	745.5	709.1	680.9	633.8	573.2	523.5	473.7
10°	1626.9	1574.4	1513.8	1404.8	1325.4	1240.7	1173.4	1046.9	894.8	769.7	648.6
12.5°	2621.3	2625.3	2512.3	2327.9	2181.3	2031.9	1916.2	1682.0	1412.9	1177.4	944.6
15°	3907.7	3833.7	3716.6	3434.0	3140.7	2924.1	2739.7	2384.5	2003.6	1659.2	1320.1
17.5°	5262.8	5293.7	5020.5	4559.0	4094.8	3770.5	3491.9	2953.7	2501.5	2075.0	1660.5
20°	7162.8	6950.2	6559.9	5811.8	5090.5	4620.9	4207.8	3509.4	2878.3	2336.0	1870.4
22.5°	9353.5	9010.3	8216.4	7162.8	6071.5	5421.5	4845.6	3884.8	3117.8	2469.2	1941.7
25°	11564.3	11302.0	10037.1	8462.7	6899.0	6056.7	5311.2	4139.2	3232.2	2500.2	1929.6
27.5°	13270.6	12842.7	11401.5	9349.4	7392.9	6398.5	5527.9	4217.2	3208.0	2424.8	1815.3
30°	13998.6	13457.7	11860.4	9551.3	7396.9	6342.0	5420.2	4062.5	3035.7	2233.7	1600.0
32.5°	13549.2	12924.8	11314.1	8992.8	6891.0	5900.6	5004.4	3727.4	2750.5	1933.7	1201.6
35°	12064.9	11443.2	9950.9	7890.8	6083.6	5218.4	4439.2	3290.1	2342.7	1433.1	675.5
37.5°	9879.6	9349.4	8282.4	6613.8	5126.9	4424.4	3775.8	2772.0	1745.3	822.2	339.1
40°	7430.6	7057.8	6417.3	5245.3	4149.9	3615.7	3093.6	2123.4	1060.4	413.1	192.4
42.5°	5151.1	4908.9	4587.3	3880.8	3201.3	2833.9	2415.4	1418.3	545.0	227.4	119.8
45°	2971.2	2819.1	2730.3	2428.9	2163.8	1984.8	1614.8	764.3	275.9	135.9	79.4
47.5°	1312.0	1211.1	1168.0	1041.5	968.9	920.4	730.7	325.6	148.0	87.5	65.9
50°	479.0	479.0	480.4	422.5	345.8	310.8	243.6	144.0	83.4	68.6	48.4
52.5°	169.5	166.9	173.6	164.2	144.0	129.2	107.7	72.7	51.1	43.1	26.9
55°	68.6	65.9	68.6	64.6	60.6	56.5	49.8	39.0	32.3	26.9	14.8
57.5°	30.9	30.9	32.3	30.9	30.9	28.3	25.6	29.6	22.9	14.8	9.4
60°	14.8	14.8	16.1	16.1	16.1	14.8	14.8	16.1	13.5	9.4	6.7
62.5°	6.7	6.7	8.1	8.1	8.1	8.1	8.1	9.4	6.7	5.4	4.0
65°	4.0	2.7	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
67.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	4.0	4.0
70°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	4.0
72.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	4.0
75°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	4.0
77.5°	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	2.7	2.7	4.0
80°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	2.7	2.7	2.7
82.5°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	2.7	2.7	2.7
85°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	2.7	2.7
87.5°	0.0	0.0	0.0	0.0	1.3	1.3	1.3	1.3	1.3	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°	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7
2.5°	300.1	296.0	288.0	283.9	278.5	274.5	271.8	266.4	261.1	257.0	254.3
5°	352.6	337.8	320.3	306.8	296.0	289.3	278.5	269.1	258.4	250.3	243.6
7.5°	429.3	392.9	353.9	327.0	312.2	298.7	279.9	263.7	248.9	238.2	228.8
10°	549.0	471.0	402.3	349.9	324.3	305.5	275.9	253.0	234.1	219.3	209.9
12.5°	748.2	588.0	466.9	378.1	339.1	310.8	269.1	238.2	215.3	200.5	188.4
15°	1021.3	760.3	555.7	411.8	356.6	316.2	258.4	220.7	195.1	177.6	166.9
17.5°	1278.3	940.6	656.7	452.1	374.1	318.9	243.6	197.8	170.9	154.7	144.0
20°	1439.8	1057.7	723.9	475.0	379.5	310.8	223.4	173.6	146.7	131.9	121.1
22.5°	1477.5	1071.1	718.6	453.5	356.6	286.6	195.1	149.4	123.8	110.3	100.9
25°	1422.3	995.8	643.2	391.6	304.1	240.9	162.8	121.1	102.3	90.2	83.4
27.5°	1283.7	847.7	508.6	294.7	227.4	177.6	123.8	94.2	82.1	72.7	68.6
30°	1034.8	596.1	318.9	183.0	145.3	117.1	88.8	72.7	63.2	59.2	55.2
32.5°	627.1	306.8	168.2	109.0	91.5	79.4	64.6	53.8	48.4	45.8	44.4
35°	298.7	161.5	103.6	74.0	64.6	56.5	47.1	40.4	37.7	36.3	36.3
37.5°	169.5	105.0	70.0	49.8	44.4	39.0	35.0	30.9	29.6	29.6	29.6
40°	107.7	67.3	45.8	36.3	32.3	29.6	26.9	24.2	24.2	24.2	24.2
42.5°	70.0	48.4	35.0	26.9	24.2	22.9	20.2	18.8	18.8	18.8	20.2
45°	55.2	40.4	28.3	21.5	18.8	17.5	16.1	14.8	14.8	14.8	16.1
47.5°	47.1	28.3	18.8	14.8	12.1	12.1	10.8	10.8	10.8	12.1	13.5
50°	28.3	17.5	12.1	9.4	8.1	8.1	8.1	8.1	8.1	9.4	10.8
52.5°	16.1	10.8	8.1	6.7	5.4	5.4	5.4	5.4	6.7	8.1	8.1
55°	10.8	8.1	5.4	5.4	4.0	4.0	4.0	5.4	5.4	6.7	8.1
57.5°	6.7	5.4	4.0	4.0	4.0	4.0	4.0	4.0	5.4	6.7	6.7
60°	5.4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.4	5.4	6.7
62.5°	4.0	4.0	5.4	4.0	4.0	4.0	4.0	4.0	5.4	5.4	6.7
65°	4.0	4.0	5.4	5.4	4.0	4.0	4.0	4.0	4.0	5.4	6.7
67.5°	4.0	4.0	5.4	5.4	5.4	5.4	4.0	4.0	4.0	5.4	5.4
70°	4.0	5.4	5.4	5.4	5.4	5.4	5.4	4.0	4.0	5.4	5.4
72.5°	4.0	5.4	5.4	5.4	5.4	5.4	5.4	4.0	4.0	5.4	5.4
75°	4.0	4.0	5.4	5.4	5.4	5.4	5.4	4.0	4.0	4.0	5.4
77.5°	4.0	4.0	5.4	5.4	5.4	5.4	5.4	4.0	4.0	4.0	5.4
80°	4.0	4.0	4.0	5.4	4.0	5.4	4.0	4.0	4.0	4.0	4.0
82.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
85°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
87.5°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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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CATALOG NUMBER: LDSQA4A28830D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7
2.5°	250.3	247.6	243.6	242.2	243.6	242.2	235.5	234.1	231.4	231.4	231.4
5°	236.8	232.8	227.4	224.7	224.7	222.0	215.3	214.0	209.9	209.9	208.6
7.5°	220.7	215.3	208.6	205.9	205.9	203.2	196.5	193.8	191.1	191.1	189.7
10°	201.8	195.1	188.4	187.0	185.7	181.7	177.6	176.3	172.2	173.6	172.2
12.5°	180.3	174.9	169.5	166.9	166.9	162.8	160.1	158.8	157.4	157.4	157.4
15°	160.1	153.4	148.0	146.7	146.7	145.3	142.6	142.6	139.9	142.6	142.6
17.5°	137.3	131.9	130.5	127.8	129.2	127.8	125.1	126.5	126.5	127.8	129.2
20°	115.7	111.7	110.3	109.0	110.3	110.3	109.0	110.3	111.7	115.7	118.4
22.5°	96.9	94.2	94.2	92.8	94.2	95.5	94.2	96.9	99.6	102.3	106.3
25°	80.7	79.4	79.4	79.4	80.7	82.1	83.4	86.1	87.5	91.5	94.2
27.5°	65.9	65.9	65.9	67.3	68.6	70.0	71.3	75.4	76.7	80.7	83.4
30°	55.2	53.8	55.2	56.5	57.9	60.6	61.9	64.6	65.9	70.0	72.7
32.5°	44.4	45.8	47.1	48.4	49.8	51.1	52.5	55.2	57.9	60.6	63.2
35°	37.7	37.7	39.0	40.4	41.7	44.4	45.8	47.1	49.8	52.5	53.8
37.5°	30.9	32.3	33.6	35.0	36.3	37.7	39.0	40.4	41.7	44.4	47.1
40°	25.6	26.9	28.3	29.6	29.6	32.3	32.3	35.0	36.3	39.0	41.7
42.5°	21.5	22.9	24.2	25.6	25.6	26.9	28.3	29.6	30.9	33.6	36.3
45°	17.5	18.8	20.2	21.5	21.5	22.9	24.2	25.6	26.9	29.6	30.9
47.5°	14.8	16.1	17.5	18.8	18.8	20.2	21.5	22.9	22.9	25.6	26.9
50°	12.1	13.5	14.8	16.1	16.1	17.5	18.8	20.2	20.2	21.5	22.9
52.5°	9.4	10.8	13.5	13.5	14.8	16.1	16.1	17.5	17.5	18.8	20.2
55°	9.4	10.8	12.1	12.1	13.5	14.8	14.8	16.1	16.1	16.1	17.5
57.5°	8.1	9.4	10.8	12.1	12.1	13.5	13.5	13.5	13.5	14.8	14.8
60°	8.1	9.4	9.4	10.8	10.8	12.1	12.1	12.1	12.1	13.5	13.5
62.5°	8.1	8.1	9.4	9.4	10.8	10.8	10.8	12.1	12.1	12.1	12.1
65°	6.7	8.1	9.4	9.4	9.4	10.8	10.8	10.8	10.8	10.8	10.8
67.5°	6.7	8.1	8.1	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
70°	6.7	6.7	8.1	8.1	8.1	9.4	9.4	9.4	8.1	9.4	8.1
72.5°	5.4	6.7	6.7	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
75°	5.4	6.7	6.7	6.7	6.7	8.1	8.1	6.7	6.7	6.7	6.7
77.5°	5.4	5.4	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	5.4
80°	5.4	5.4	5.4	5.4	6.7	6.7	5.4	5.4	5.4	5.4	5.4
82.5°	4.0	5.4	5.4	5.4	5.4	5.4	5.4	5.4	4.0	4.0	4.0
85°	4.0	4.0	5.4	5.4	5.4	5.4	4.0	4.0	4.0	4.0	2.7
87.5°	4.0	4.0	4.0	5.4	4.0	4.0	4.0	4.0	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



TEST NUMBER: P182663

CATALOG NUMBER: LDSQA4A28830D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	263.7	263.7	263.7	263.7	263.7	263.7	263.7	263.7
2.5°	227.4	226.1	227.4	226.1	226.1	227.4	223.4	226.1
5°	205.9	203.2	204.5	203.2	201.8	203.2	200.5	203.2
7.5°	187.0	185.7	185.7	185.7	184.4	185.7	183.0	185.7
10°	170.9	169.5	169.5	169.5	169.5	170.9	168.2	170.9
12.5°	154.7	154.7	156.1	154.7	156.1	157.4	154.7	157.4
15°	141.3	142.6	144.0	144.0	145.3	146.7	145.3	148.0
17.5°	130.5	131.9	134.6	134.6	135.9	138.6	137.3	139.9
20°	119.8	121.1	123.8	123.8	125.1	127.8	126.5	129.2
22.5°	107.7	110.3	111.7	113.0	114.4	117.1	115.7	118.4
25°	95.5	99.6	100.9	102.3	103.6	106.3	106.3	109.0
27.5°	86.1	88.8	90.2	91.5	94.2	96.9	96.9	98.2
30°	75.4	78.0	80.7	82.1	83.4	86.1	86.1	88.8
32.5°	65.9	68.6	70.0	71.3	74.0	76.7	78.0	79.4
35°	56.5	60.6	61.9	64.6	65.9	70.0	70.0	71.3
37.5°	49.8	52.5	55.2	56.5	59.2	61.9	61.9	64.6
40°	44.4	47.1	48.4	49.8	52.5	55.2	55.2	56.5
42.5°	37.7	41.7	43.1	44.4	45.8	48.4	49.8	51.1
45°	33.6	35.0	36.3	37.7	39.0	41.7	41.7	43.1
47.5°	28.3	29.6	30.9	32.3	33.6	35.0	36.3	37.7
50°	24.2	25.6	26.9	26.9	28.3	30.9	30.9	32.3
52.5°	20.2	21.5	22.9	22.9	24.2	26.9	26.9	28.3
55°	17.5	18.8	20.2	20.2	21.5	22.9	22.9	24.2
57.5°	16.1	16.1	17.5	17.5	18.8	18.8	20.2	20.2
60°	13.5	14.8	14.8	14.8	16.1	16.1	16.1	16.1
62.5°	12.1	12.1	12.1	12.1	12.1	12.1	12.1	13.5
65°	10.8	10.8	10.8	10.8	10.8	10.8	9.4	10.8
67.5°	9.4	9.4	9.4	9.4	8.1	8.1	8.1	8.1
70°	8.1	8.1	8.1	8.1	8.1	6.7	6.7	6.7
72.5°	6.7	6.7	6.7	6.7	6.7	5.4	5.4	5.4
75°	6.7	6.7	5.4	5.4	5.4	5.4	5.4	4.0
77.5°	5.4	5.4	5.4	5.4	4.0	4.0	4.0	4.0
80°	4.0	4.0	4.0	4.0	4.0	4.0	2.7	2.7
82.5°	4.0	2.7	2.7	2.7	2.7	2.7	2.7	2.7
85°	2.7	2.7	2.7	2.7	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
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)