

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: P182641

Luminaire Tested: **LDSQA4A18840D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P182641
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: LDSQA4A18840D010TE 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 / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1904.3 lumens
Efficiency: N/A
Efficacy: 65.4 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

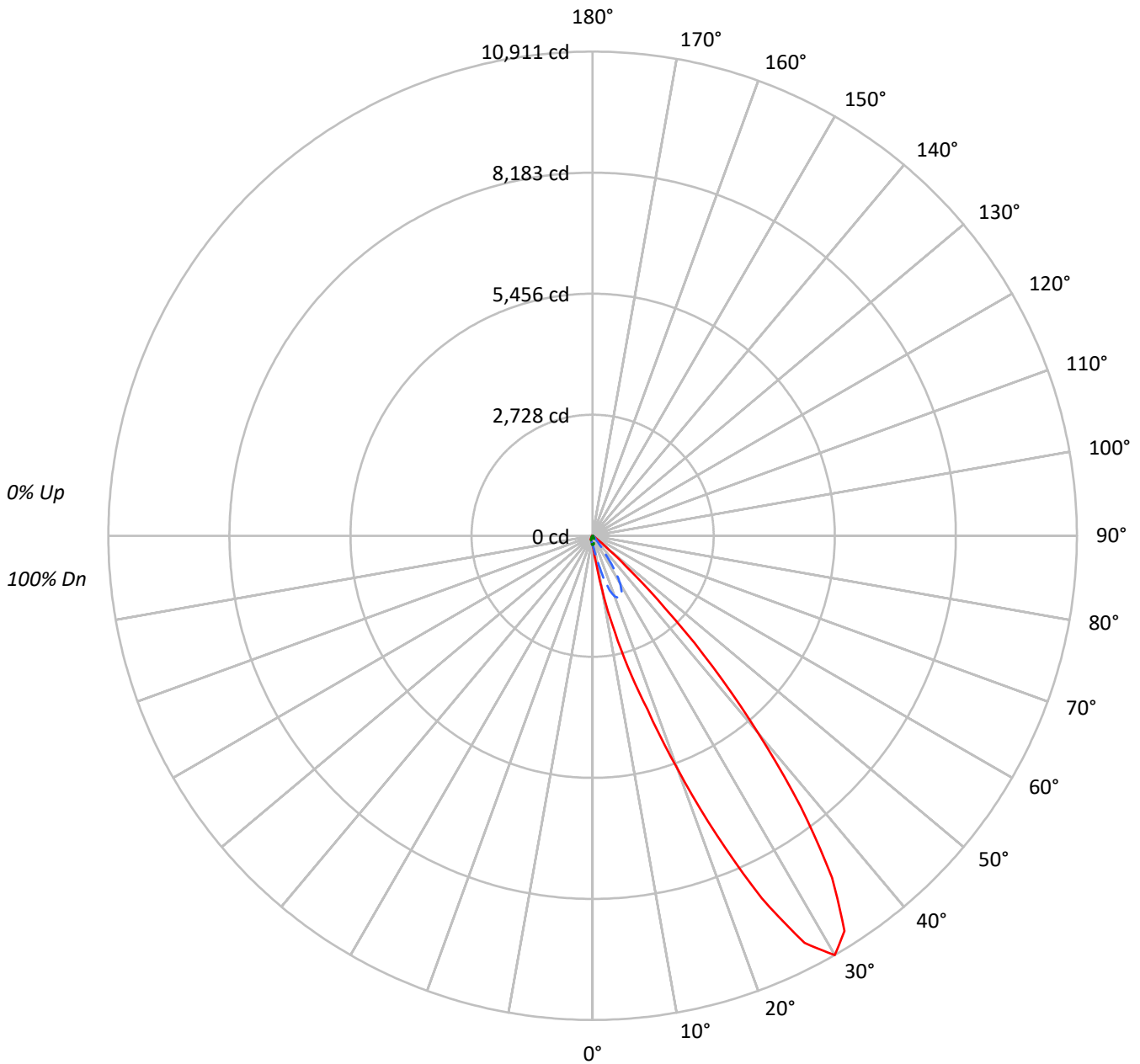
Input Watts (W): 29.12
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	19918	19918	19918
5°	38149	18973	15404
10°	124733	16821	13103
15°	305462	13881	11574
20°	575546	10598	10381
25°	963455	7514	9086
30°	1220505	5157	7741
35°	1112099	3347	6575
40°	732404	2390	5564
45°	317270	1576	4603
50°	56276	1100	3798
55°	9036	878	3192
60°	2228	814	2441
65°	711	963	1926
70°	595	1190	1473
75°	786	1160	1160
80°	0	1729	1172
85°	0	3446	1112



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	26.4	1.4
10°-20°	211.8	11.1
20°-30°	638.1	33.5
30°-40°	726.2	38.1
40°-50°	268.5	14.1
50°-60°	21.3	1.1
60°-70°	5.7	0.3
70°-80°	4.0	0.2
80°-90°	2.3	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°	876.3	46.0
0°-40°	1602.5	84.2
0°-60°	1892.4	99.4
0°-90°	1904.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1904.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	206	206	206	206	206	
5°	392	288	195	164	158	64
15°	3046	1029	138	109	115	955
25°	9014	1504	70	68	85	4114
35°	9404	526	28	39	56	5591
45°	2316	62	12	21	34	1961
55°	54	12	5	13	19	88
65°	3	3	4	8	8	4
75°	2	3	3	5	3	1
85°	0	2	3	3	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°	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6
2.5°	264.3	266.4	264.3	260.1	260.1	254.9	252.8	250.7	245.4	242.3	238.1
5°	392.3	386.0	380.7	368.1	363.9	352.4	344.0	332.5	316.7	303.1	288.4
7.5°	671.2	661.8	641.9	604.1	581.0	552.7	530.7	494.0	446.8	408.0	369.2
10°	1268.0	1227.1	1179.9	1095.0	1033.1	967.0	914.6	816.0	697.5	599.9	505.5
12.5°	2043.1	2046.2	1958.1	1814.4	1700.1	1583.7	1493.5	1311.0	1101.2	917.7	736.3
15°	3045.7	2988.1	2896.8	2676.6	2447.9	2279.1	2135.4	1858.5	1561.7	1293.2	1028.9
17.5°	4101.9	4126.0	3913.1	3553.4	3191.5	2938.8	2721.7	2302.1	1949.7	1617.3	1294.2
20°	5582.8	5417.1	5112.9	4529.8	3967.6	3601.6	3279.6	2735.3	2243.4	1820.7	1457.8
22.5°	7290.3	7022.8	6404.0	5582.8	4732.2	4225.6	3776.8	3027.9	2430.1	1924.6	1513.4
25°	9013.5	8808.9	7823.1	6596.0	5377.2	4720.7	4139.6	3226.1	2519.2	1948.7	1504.0
27.5°	10343.3	10009.8	8886.6	7287.1	5762.2	4987.1	4308.5	3287.0	2500.4	1890.0	1414.8
30°	10910.8	10489.1	9244.2	7444.4	5765.3	4943.0	4224.6	3166.4	2366.1	1741.0	1247.0
32.5°	10560.5	10073.8	8818.4	7009.2	5370.9	4599.0	3900.5	2905.2	2143.8	1507.1	936.6
35°	9403.6	8919.1	7755.9	6150.2	4741.7	4067.3	3460.0	2564.3	1826.0	1117.0	526.5
37.5°	7700.4	7287.1	6455.4	5154.9	3996.0	3448.5	2943.0	2160.5	1360.3	640.8	264.3
40°	5791.5	5501.0	5001.8	4088.3	3234.5	2818.1	2411.2	1655.0	826.5	322.0	150.0
42.5°	4014.8	3826.1	3575.4	3024.8	2495.1	2208.8	1882.6	1105.4	424.8	177.2	93.3
45°	2315.8	2197.3	2128.0	1893.1	1686.5	1547.0	1258.6	595.7	215.0	105.9	61.9
47.5°	1022.6	943.9	910.4	811.8	755.1	717.4	569.5	253.8	115.4	68.2	51.4
50°	373.4	373.4	374.4	329.3	269.5	242.3	189.8	112.2	65.0	53.5	37.8
52.5°	132.1	130.1	135.3	128.0	112.2	100.7	83.9	56.6	39.9	33.6	21.0
55°	53.5	51.4	53.5	50.3	47.2	44.0	38.8	30.4	25.2	21.0	11.5
57.5°	24.1	24.1	25.2	24.1	24.1	22.0	19.9	23.1	17.8	11.5	7.3
60°	11.5	11.5	12.6	12.6	12.6	11.5	11.5	12.6	10.5	7.3	5.2
62.5°	5.2	5.2	6.3	6.3	6.3	6.3	6.3	7.3	5.2	4.2	3.1
65°	3.1	2.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
67.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3.1	3.1
70°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3.1
72.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3.1
75°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3.1
77.5°	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1	3.1
80°	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	2.1	2.1	2.1
82.5°	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	2.1	2.1	2.1
85°	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	2.1	2.1
87.5°	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	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



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6
2.5°	233.9	230.7	224.4	221.3	217.1	214.0	211.9	207.7	203.5	200.3	198.2
5°	274.8	263.3	249.6	239.1	230.7	225.5	217.1	209.8	201.4	195.1	189.8
7.5°	334.6	306.3	275.8	254.9	243.3	232.8	218.2	205.6	194.0	185.6	178.3
10°	427.9	367.1	313.6	272.7	252.8	238.1	215.0	197.2	182.5	171.0	163.6
12.5°	583.1	458.3	363.9	294.7	264.3	242.3	209.8	185.6	167.8	156.3	146.8
15°	796.0	592.6	433.2	320.9	277.9	246.5	201.4	172.0	152.1	138.4	130.1
17.5°	996.4	733.1	511.8	352.4	291.6	248.6	189.8	154.2	133.2	120.6	112.2
20°	1122.2	824.4	564.3	370.2	295.8	242.3	174.1	135.3	114.3	102.8	94.4
22.5°	1151.6	834.9	560.1	353.4	277.9	223.4	152.1	116.4	96.5	86.0	78.7
25°	1108.6	776.1	501.3	305.2	237.0	187.7	126.9	94.4	79.7	70.3	65.0
27.5°	1000.6	660.7	396.4	229.7	177.2	138.4	96.5	73.4	64.0	56.6	53.5
30°	806.5	464.6	248.6	142.6	113.3	91.2	69.2	56.6	49.3	46.1	43.0
32.5°	488.7	239.1	131.1	85.0	71.3	61.9	50.3	42.0	37.8	35.7	34.6
35°	232.8	125.9	80.8	57.7	50.3	44.0	36.7	31.5	29.4	28.3	28.3
37.5°	132.1	81.8	54.5	38.8	34.6	30.4	27.3	24.1	23.1	23.1	23.1
40°	83.9	52.4	35.7	28.3	25.2	23.1	21.0	18.9	18.9	18.9	18.9
42.5°	54.5	37.8	27.3	21.0	18.9	17.8	15.7	14.7	14.7	14.7	15.7
45°	43.0	31.5	22.0	16.8	14.7	13.6	12.6	11.5	11.5	11.5	12.6
47.5°	36.7	22.0	14.7	11.5	9.4	9.4	8.4	8.4	8.4	9.4	10.5
50°	22.0	13.6	9.4	7.3	6.3	6.3	6.3	6.3	6.3	7.3	8.4
52.5°	12.6	8.4	6.3	5.2	4.2	4.2	4.2	4.2	5.2	6.3	6.3
55°	8.4	6.3	4.2	4.2	3.1	3.1	3.1	4.2	4.2	5.2	6.3
57.5°	5.2	4.2	3.1	3.1	3.1	3.1	3.1	3.1	4.2	5.2	5.2
60°	4.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	4.2	4.2	5.2
62.5°	3.1	3.1	4.2	3.1	3.1	3.1	3.1	3.1	4.2	4.2	5.2
65°	3.1	3.1	4.2	4.2	3.1	3.1	3.1	3.1	3.1	4.2	5.2
67.5°	3.1	3.1	4.2	4.2	4.2	4.2	3.1	3.1	3.1	4.2	4.2
70°	3.1	4.2	4.2	4.2	4.2	4.2	4.2	3.1	3.1	4.2	4.2
72.5°	3.1	4.2	4.2	4.2	4.2	4.2	4.2	3.1	3.1	4.2	4.2
75°	3.1	3.1	4.2	4.2	4.2	4.2	4.2	3.1	3.1	3.1	4.2
77.5°	3.1	3.1	4.2	4.2	4.2	4.2	4.2	3.1	3.1	3.1	4.2
80°	3.1	3.1	3.1	4.2	3.1	4.2	3.1	3.1	3.1	3.1	3.1
82.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
85°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
87.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
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°	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6
2.5°	195.1	193.0	189.8	188.8	189.8	188.8	183.5	182.5	180.4	180.4	180.4
5°	184.6	181.4	177.2	175.2	175.2	173.1	167.8	166.8	163.6	163.6	162.6
7.5°	172.0	167.8	162.6	160.5	160.5	158.4	153.1	151.0	148.9	148.9	147.9
10°	157.3	152.1	146.8	145.8	144.7	141.6	138.4	137.4	134.2	135.3	134.2
12.5°	140.5	136.3	132.1	130.1	130.1	126.9	124.8	123.8	122.7	122.7	122.7
15°	124.8	119.6	115.4	114.3	114.3	113.3	111.2	111.2	109.1	111.2	111.2
17.5°	107.0	102.8	101.7	99.6	100.7	99.6	97.5	98.6	98.6	99.6	100.7
20°	90.2	87.1	86.0	85.0	86.0	86.0	85.0	86.0	87.1	90.2	92.3
22.5°	75.5	73.4	73.4	72.4	73.4	74.5	73.4	75.5	77.6	79.7	82.9
25°	62.9	61.9	61.9	61.9	62.9	64.0	65.0	67.1	68.2	71.3	73.4
27.5°	51.4	51.4	51.4	52.4	53.5	54.5	55.6	58.7	59.8	62.9	65.0
30°	43.0	42.0	43.0	44.0	45.1	47.2	48.2	50.3	51.4	54.5	56.6
32.5°	34.6	35.7	36.7	37.8	38.8	39.9	40.9	43.0	45.1	47.2	49.3
35°	29.4	29.4	30.4	31.5	32.5	34.6	35.7	36.7	38.8	40.9	42.0
37.5°	24.1	25.2	26.2	27.3	28.3	29.4	30.4	31.5	32.5	34.6	36.7
40°	19.9	21.0	22.0	23.1	23.1	25.2	25.2	27.3	28.3	30.4	32.5
42.5°	16.8	17.8	18.9	19.9	19.9	21.0	22.0	23.1	24.1	26.2	28.3
45°	13.6	14.7	15.7	16.8	16.8	17.8	18.9	19.9	21.0	23.1	24.1
47.5°	11.5	12.6	13.6	14.7	14.7	15.7	16.8	17.8	17.8	19.9	21.0
50°	9.4	10.5	11.5	12.6	12.6	13.6	14.7	15.7	15.7	16.8	17.8
52.5°	7.3	8.4	10.5	10.5	11.5	12.6	12.6	13.6	13.6	14.7	15.7
55°	7.3	8.4	9.4	9.4	10.5	11.5	11.5	12.6	12.6	12.6	13.6
57.5°	6.3	7.3	8.4	9.4	9.4	10.5	10.5	10.5	10.5	11.5	11.5
60°	6.3	7.3	7.3	8.4	8.4	9.4	9.4	9.4	9.4	10.5	10.5
62.5°	6.3	6.3	7.3	7.3	8.4	8.4	8.4	9.4	9.4	9.4	9.4
65°	5.2	6.3	7.3	7.3	7.3	8.4	8.4	8.4	8.4	8.4	8.4
67.5°	5.2	6.3	6.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
70°	5.2	5.2	6.3	6.3	6.3	7.3	7.3	7.3	6.3	7.3	6.3
72.5°	4.2	5.2	5.2	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
75°	4.2	5.2	5.2	5.2	5.2	6.3	6.3	5.2	5.2	5.2	5.2
77.5°	4.2	4.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	4.2
80°	4.2	4.2	4.2	4.2	5.2	5.2	4.2	4.2	4.2	4.2	4.2
82.5°	3.1	4.2	4.2	4.2	4.2	4.2	4.2	4.2	3.1	3.1	3.1
85°	3.1	3.1	4.2	4.2	4.2	4.2	3.1	3.1	3.1	3.1	2.1
87.5°	3.1	3.1	3.1	4.2	3.1	3.1	3.1	3.1	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: P182641

CATALOG NUMBER: LDSQA4A18840D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	205.6	205.6	205.6	205.6	205.6	205.6	205.6	205.6
2.5°	177.2	176.2	177.2	176.2	176.2	177.2	174.1	176.2
5°	160.5	158.4	159.4	158.4	157.3	158.4	156.3	158.4
7.5°	145.8	144.7	144.7	144.7	143.7	144.7	142.6	144.7
10°	133.2	132.1	132.1	132.1	132.1	133.2	131.1	133.2
12.5°	120.6	120.6	121.7	120.6	121.7	122.7	120.6	122.7
15°	110.1	111.2	112.2	112.2	113.3	114.3	113.3	115.4
17.5°	101.7	102.8	104.9	104.9	105.9	108.0	107.0	109.1
20°	93.3	94.4	96.5	96.5	97.5	99.6	98.6	100.7
22.5°	83.9	86.0	87.1	88.1	89.1	91.2	90.2	92.3
25°	74.5	77.6	78.7	79.7	80.8	82.9	82.9	85.0
27.5°	67.1	69.2	70.3	71.3	73.4	75.5	75.5	76.6
30°	58.7	60.8	62.9	64.0	65.0	67.1	67.1	69.2
32.5°	51.4	53.5	54.5	55.6	57.7	59.8	60.8	61.9
35°	44.0	47.2	48.2	50.3	51.4	54.5	54.5	55.6
37.5°	38.8	40.9	43.0	44.0	46.1	48.2	48.2	50.3
40°	34.6	36.7	37.8	38.8	40.9	43.0	43.0	44.0
42.5°	29.4	32.5	33.6	34.6	35.7	37.8	38.8	39.9
45°	26.2	27.3	28.3	29.4	30.4	32.5	32.5	33.6
47.5°	22.0	23.1	24.1	25.2	26.2	27.3	28.3	29.4
50°	18.9	19.9	21.0	21.0	22.0	24.1	24.1	25.2
52.5°	15.7	16.8	17.8	17.8	18.9	21.0	21.0	22.0
55°	13.6	14.7	15.7	15.7	16.8	17.8	17.8	18.9
57.5°	12.6	12.6	13.6	13.6	14.7	14.7	15.7	15.7
60°	10.5	11.5	11.5	11.5	12.6	12.6	12.6	12.6
62.5°	9.4	9.4	9.4	9.4	9.4	9.4	9.4	10.5
65°	8.4	8.4	8.4	8.4	8.4	8.4	7.3	8.4
67.5°	7.3	7.3	7.3	7.3	6.3	6.3	6.3	6.3
70°	6.3	6.3	6.3	6.3	6.3	5.2	5.2	5.2
72.5°	5.2	5.2	5.2	5.2	5.2	4.2	4.2	4.2
75°	5.2	5.2	4.2	4.2	4.2	4.2	4.2	3.1
77.5°	4.2	4.2	4.2	4.2	3.1	3.1	3.1	3.1
80°	3.1	3.1	3.1	3.1	3.1	3.1	2.1	2.1
82.5°	3.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
85°	2.1	2.1	2.1	2.1	1.0	1.0	1.0	1.0
87.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)