

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: P182656

Luminaire Tested: **LDSQA4A13835D010TE LAR15SP 4LSQA1H-LSF-20 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P182656
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: LDSQA4A13835D010TE 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 / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1457.6 lumens
Efficiency: N/A
Efficacy: 65.5 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

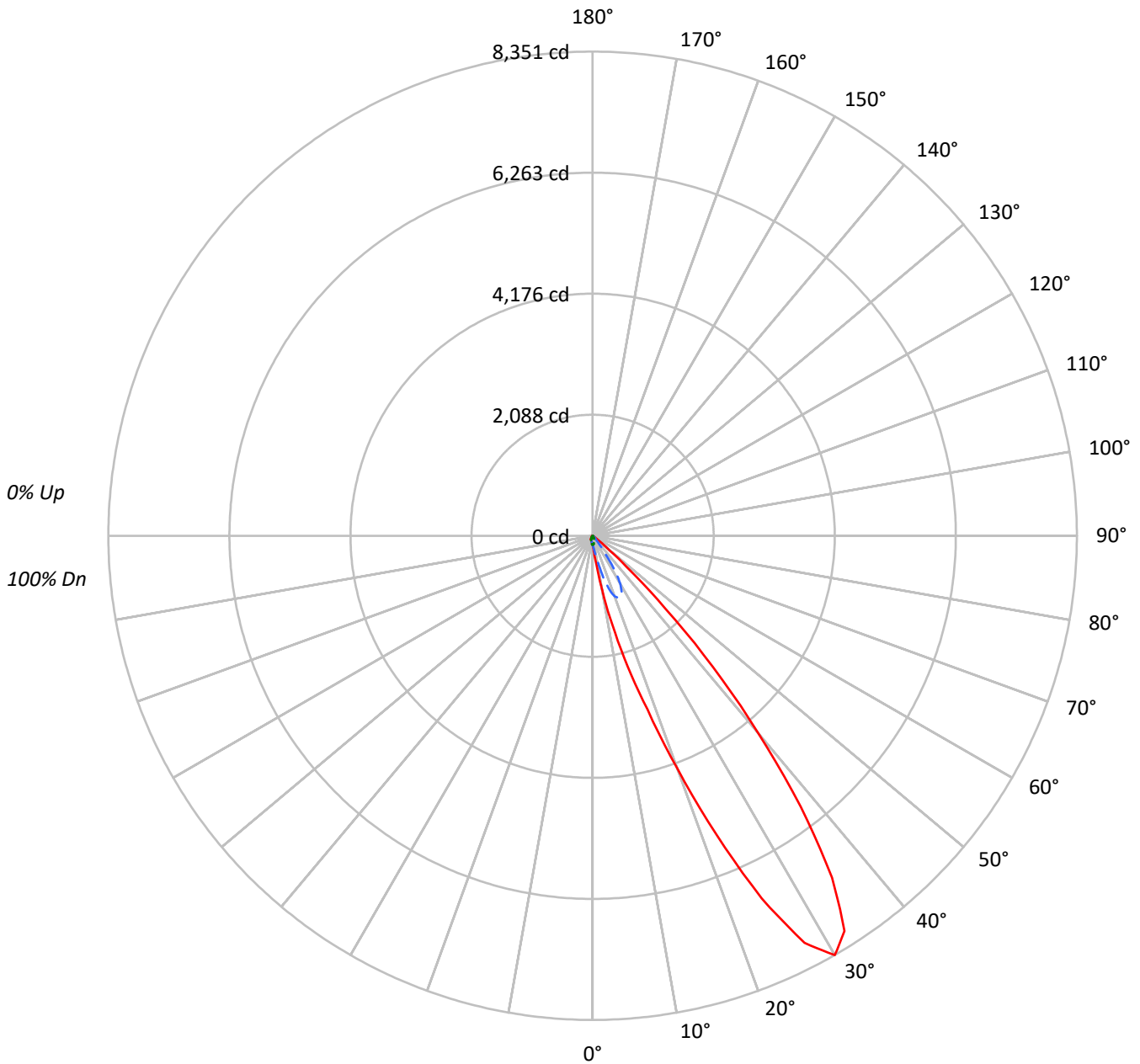
Input Watts (W): 22.27
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P182656

CATALOG NUMBER: LDSQA4A13835D010TE LAR15SP 4LSQA1H-LSF-20 30°

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	105	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°	15239	15239	15239
5°	29193	14519	11786
10°	95468	12877	10034
15°	233803	10631	8856
20°	440525	8113	7948
25°	737436	5751	6948
30°	934183	3949	5929
35°	851210	2566	5026
40°	560593	1821	4262
45°	242837	1206	3521
50°	43073	844	2909
55°	6908	676	2432
60°	1705	620	1860
65°	550	734	1467
70°	453	906	1133
75°	599	898	898
80°	0	1339	893
85°	0	2668	889



TEST NUMBER: P182656

CATALOG NUMBER: LDSQA4A13835D010TE LAR15SP 4LSQA1H-LSF-20 30°

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	20.2	1.4
10°-20°	162.1	11.1
20°-30°	488.4	33.5
30°-40°	555.9	38.1
40°-50°	205.5	14.1
50°-60°	16.3	1.1
60°-70°	4.4	0.3
70°-80°	3.1	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°	670.7	46.0
0°-40°	1226.6	84.2
0°-60°	1448.4	99.4
0°-90°	1457.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1457.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	157	157	157	157	157	
5°	300	221	149	125	121	49
15°	2331	788	106	84	88	731
25°	6899	1151	54	52	65	3149
35°	7198	403	22	30	42	4279
45°	1772	47	9	16	26	1501
55°	41	9	4	10	14	67
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	



TEST NUMBER: P182656

CATALOG NUMBER: LDSQA4A13835D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3
2.5°	202.3	203.9	202.3	199.1	199.1	195.1	193.5	191.9	187.8	185.4	182.2
5°	300.2	295.4	291.4	281.8	278.6	269.7	263.3	254.5	242.4	232.0	220.8
7.5°	513.8	506.5	491.3	462.4	444.7	423.1	406.2	378.1	342.0	312.3	282.6
10°	970.5	939.2	903.1	838.1	790.7	740.1	700.0	624.6	533.8	459.2	386.9
12.5°	1563.8	1566.2	1498.8	1388.8	1301.3	1212.2	1143.1	1003.5	842.9	702.4	563.5
15°	2331.2	2287.1	2217.2	2048.7	1873.7	1744.4	1634.4	1422.5	1195.3	989.8	787.5
17.5°	3139.6	3158.1	2995.1	2719.8	2442.8	2249.3	2083.2	1762.1	1492.3	1237.9	990.6
20°	4273.1	4146.3	3913.5	3467.1	3036.9	2756.7	2510.2	2093.6	1717.1	1393.6	1115.8
22.5°	5580.0	5375.3	4901.7	4273.1	3622.1	3234.3	2890.8	2317.6	1860.0	1473.1	1158.4
25°	6899.0	6742.4	5987.8	5048.6	4115.8	3613.2	3168.5	2469.3	1928.2	1491.5	1151.2
27.5°	7916.9	7661.6	6801.8	5577.6	4410.4	3817.1	3297.8	2515.9	1913.8	1446.6	1082.9
30°	8351.2	8028.5	7075.6	5698.0	4412.8	3783.4	3233.5	2423.5	1811.0	1332.6	954.5
32.5°	8083.0	7710.6	6749.6	5364.9	4111.0	3520.1	2985.5	2223.7	1640.9	1153.6	716.9
35°	7197.6	6826.7	5936.4	4707.4	3629.3	3113.1	2648.3	1962.8	1397.6	854.9	403.0
37.5°	5893.9	5577.6	4941.0	3945.6	3058.5	2639.5	2252.6	1653.7	1041.2	490.5	202.3
40°	4432.9	4210.5	3828.4	3129.2	2475.7	2157.0	1845.6	1266.8	632.6	246.4	114.8
42.5°	3073.0	2928.5	2736.6	2315.2	1909.8	1690.6	1441.0	846.1	325.1	135.7	71.4
45°	1772.5	1681.8	1628.8	1449.0	1290.8	1184.1	963.3	456.0	164.6	81.1	47.4
47.5°	782.7	722.5	696.8	621.3	578.0	549.1	435.9	194.3	88.3	52.2	39.3
50°	285.8	285.8	286.6	252.1	206.3	185.4	145.3	85.9	49.8	40.9	28.9
52.5°	101.1	99.5	103.6	97.9	85.9	77.1	64.2	43.3	30.5	25.7	16.1
55°	40.9	39.3	40.9	38.5	36.1	33.7	29.7	23.3	19.3	16.1	8.8
57.5°	18.5	18.5	19.3	18.5	18.5	16.9	15.3	17.7	13.6	8.8	5.6
60°	8.8	8.8	9.6	9.6	9.6	8.8	8.8	9.6	8.0	5.6	4.0
62.5°	4.0	4.0	4.8	4.8	4.8	4.8	4.8	5.6	4.0	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



TEST NUMBER: P182656

CATALOG NUMBER: LDSQA4A13835D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3
2.5°	179.0	176.6	171.8	169.4	166.2	163.8	162.2	158.9	155.7	153.3	151.7
5°	210.3	201.5	191.1	183.0	176.6	172.6	166.2	160.6	154.1	149.3	145.3
7.5°	256.1	234.4	211.1	195.1	186.2	178.2	167.0	157.3	148.5	142.1	136.5
10°	327.5	281.0	240.0	208.7	193.5	182.2	164.6	150.9	139.7	130.9	125.2
12.5°	446.3	350.8	278.6	225.6	202.3	185.4	160.6	142.1	128.4	119.6	112.4
15°	609.3	453.6	331.5	245.6	212.7	188.6	154.1	131.7	116.4	106.0	99.5
17.5°	762.6	561.1	391.7	269.7	223.2	190.3	145.3	118.0	102.0	92.3	85.9
20°	859.0	631.0	431.9	283.4	226.4	185.4	133.3	103.6	87.5	78.7	72.2
22.5°	881.4	639.0	428.7	270.5	212.7	171.0	116.4	89.1	73.9	65.8	60.2
25°	848.5	594.0	383.7	233.6	181.4	143.7	97.1	72.2	61.0	53.8	49.8
27.5°	765.8	505.7	303.4	175.8	135.7	106.0	73.9	56.2	49.0	43.3	40.9
30°	617.3	355.6	190.3	109.2	86.7	69.8	53.0	43.3	37.7	35.3	32.9
32.5°	374.1	183.0	100.3	65.0	54.6	47.4	38.5	32.1	28.9	27.3	26.5
35°	178.2	96.3	61.8	44.2	38.5	33.7	28.1	24.1	22.5	21.7	21.7
37.5°	101.1	62.6	41.7	29.7	26.5	23.3	20.9	18.5	17.7	17.7	17.7
40°	64.2	40.1	27.3	21.7	19.3	17.7	16.1	14.4	14.4	14.4	14.4
42.5°	41.7	28.9	20.9	16.1	14.4	13.6	12.0	11.2	11.2	11.2	12.0
45°	32.9	24.1	16.9	12.8	11.2	10.4	9.6	8.8	8.8	8.8	9.6
47.5°	28.1	16.9	11.2	8.8	7.2	7.2	6.4	6.4	6.4	7.2	8.0
50°	16.9	10.4	7.2	5.6	4.8	4.8	4.8	4.8	4.8	5.6	6.4
52.5°	9.6	6.4	4.8	4.0	3.2	3.2	3.2	3.2	4.0	4.8	4.8
55°	6.4	4.8	3.2	3.2	2.4	2.4	2.4	3.2	3.2	4.0	4.8
57.5°	4.0	3.2	2.4	2.4	2.4	2.4	2.4	2.4	3.2	4.0	4.0
60°	3.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4	3.2	3.2	4.0
62.5°	2.4	2.4	3.2	2.4	2.4	2.4	2.4	2.4	3.2	3.2	4.0
65°	2.4	2.4	3.2	3.2	2.4	2.4	2.4	2.4	2.4	3.2	4.0
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



TEST NUMBER: P182656

CATALOG NUMBER: LDSQA4A13835D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3
2.5°	149.3	147.7	145.3	144.5	145.3	144.5	140.5	139.7	138.1	138.1	138.1
5°	141.3	138.9	135.7	134.1	134.1	132.5	128.4	127.6	125.2	125.2	124.4
7.5°	131.7	128.4	124.4	122.8	122.8	121.2	117.2	115.6	114.0	114.0	113.2
10°	120.4	116.4	112.4	111.6	110.8	108.4	106.0	105.2	102.8	103.6	102.8
12.5°	107.6	104.4	101.1	99.5	99.5	97.1	95.5	94.7	93.9	93.9	93.9
15°	95.5	91.5	88.3	87.5	87.5	86.7	85.1	85.1	83.5	85.1	85.1
17.5°	81.9	78.7	77.9	76.3	77.1	76.3	74.7	75.5	75.5	76.3	77.1
20°	69.0	66.6	65.8	65.0	65.8	65.8	65.0	65.8	66.6	69.0	70.6
22.5°	57.8	56.2	56.2	55.4	56.2	57.0	56.2	57.8	59.4	61.0	63.4
25°	48.2	47.4	47.4	47.4	48.2	49.0	49.8	51.4	52.2	54.6	56.2
27.5°	39.3	39.3	39.3	40.1	40.9	41.7	42.5	45.0	45.8	48.2	49.8
30°	32.9	32.1	32.9	33.7	34.5	36.1	36.9	38.5	39.3	41.7	43.3
32.5°	26.5	27.3	28.1	28.9	29.7	30.5	31.3	32.9	34.5	36.1	37.7
35°	22.5	22.5	23.3	24.1	24.9	26.5	27.3	28.1	29.7	31.3	32.1
37.5°	18.5	19.3	20.1	20.9	21.7	22.5	23.3	24.1	24.9	26.5	28.1
40°	15.3	16.1	16.9	17.7	17.7	19.3	19.3	20.9	21.7	23.3	24.9
42.5°	12.8	13.6	14.4	15.3	15.3	16.1	16.9	17.7	18.5	20.1	21.7
45°	10.4	11.2	12.0	12.8	12.8	13.6	14.4	15.3	16.1	17.7	18.5
47.5°	8.8	9.6	10.4	11.2	11.2	12.0	12.8	13.6	13.6	15.3	16.1
50°	7.2	8.0	8.8	9.6	9.6	10.4	11.2	12.0	12.0	12.8	13.6
52.5°	5.6	6.4	8.0	8.0	8.8	9.6	9.6	10.4	10.4	11.2	12.0
55°	5.6	6.4	7.2	7.2	8.0	8.8	8.8	9.6	9.6	9.6	10.4
57.5°	4.8	5.6	6.4	7.2	7.2	8.0	8.0	8.0	8.0	8.8	8.8
60°	4.8	5.6	5.6	6.4	6.4	7.2	7.2	7.2	7.2	8.0	8.0
62.5°	4.8	4.8	5.6	5.6	6.4	6.4	6.4	7.2	7.2	7.2	7.2
65°	4.0	4.8	5.6	5.6	5.6	6.4	6.4	6.4	6.4	6.4	6.4
67.5°	4.0	4.8	4.8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
70°	4.0	4.0	4.8	4.8	4.8	5.6	5.6	5.6	4.8	5.6	4.8
72.5°	3.2	4.0	4.0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
75°	3.2	4.0	4.0	4.0	4.0	4.8	4.8	4.0	4.0	4.0	4.0
77.5°	3.2	3.2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.2
80°	3.2	3.2	3.2	3.2	4.0	4.0	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: P182656

CATALOG NUMBER: LDSQA4A13835D010TE LAR15SP 4LSQA1H-LSF-20 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	157.3	157.3	157.3	157.3	157.3	157.3	157.3	157.3
2.5°	135.7	134.9	135.7	134.9	134.9	135.7	133.3	134.9
5°	122.8	121.2	122.0	121.2	120.4	121.2	119.6	121.2
7.5°	111.6	110.8	110.8	110.8	110.0	110.8	109.2	110.8
10°	102.0	101.1	101.1	101.1	101.1	102.0	100.3	102.0
12.5°	92.3	92.3	93.1	92.3	93.1	93.9	92.3	93.9
15°	84.3	85.1	85.9	85.9	86.7	87.5	86.7	88.3
17.5°	77.9	78.7	80.3	80.3	81.1	82.7	81.9	83.5
20°	71.4	72.2	73.9	73.9	74.7	76.3	75.5	77.1
22.5°	64.2	65.8	66.6	67.4	68.2	69.8	69.0	70.6
25°	57.0	59.4	60.2	61.0	61.8	63.4	63.4	65.0
27.5°	51.4	53.0	53.8	54.6	56.2	57.8	57.8	58.6
30°	45.0	46.6	48.2	49.0	49.8	51.4	51.4	53.0
32.5°	39.3	40.9	41.7	42.5	44.2	45.8	46.6	47.4
35°	33.7	36.1	36.9	38.5	39.3	41.7	41.7	42.5
37.5°	29.7	31.3	32.9	33.7	35.3	36.9	36.9	38.5
40°	26.5	28.1	28.9	29.7	31.3	32.9	32.9	33.7
42.5°	22.5	24.9	25.7	26.5	27.3	28.9	29.7	30.5
45°	20.1	20.9	21.7	22.5	23.3	24.9	24.9	25.7
47.5°	16.9	17.7	18.5	19.3	20.1	20.9	21.7	22.5
50°	14.4	15.3	16.1	16.1	16.9	18.5	18.5	19.3
52.5°	12.0	12.8	13.6	13.6	14.4	16.1	16.1	16.9
55°	10.4	11.2	12.0	12.0	12.8	13.6	13.6	14.4
57.5°	9.6	9.6	10.4	10.4	11.2	11.2	12.0	12.0
60°	8.0	8.8	8.8	8.8	9.6	9.6	9.6	9.6
62.5°	7.2	7.2	7.2	7.2	7.2	7.2	7.2	8.0
65°	6.4	6.4	6.4	6.4	6.4	6.4	5.6	6.4
67.5°	5.6	5.6	5.6	5.6	4.8	4.8	4.8	4.8
70°	4.8	4.8	4.8	4.8	4.8	4.0	4.0	4.0
72.5°	4.0	4.0	4.0	4.0	4.0	3.2	3.2	3.2
75°	4.0	4.0	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



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













(END OF REPORT)