

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: P175474

Luminaire Tested: **LDA6A20840D010TE LARL20NF 6LAL1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P175474
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26268)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDA6A20840D010TE LARL20NF 6LAL1 30° Tilt
Description: PORTFOLIO 6" Lensed Adjustable, Self-flange Trim Ring, 20° Narrow Flood Optic, at 30° tilt
Light Source: (1) HIGH LUMEN LED 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1680.7 lumens
Efficiency: N/A
Efficacy: 57.7 lumens/watt
Spacing Criteria (0/90/45): 2.7 / 0.43 / 1.35
Luminous Opening: Circular (Dia: 0.5' x H: 0')
CIE Type: Direct

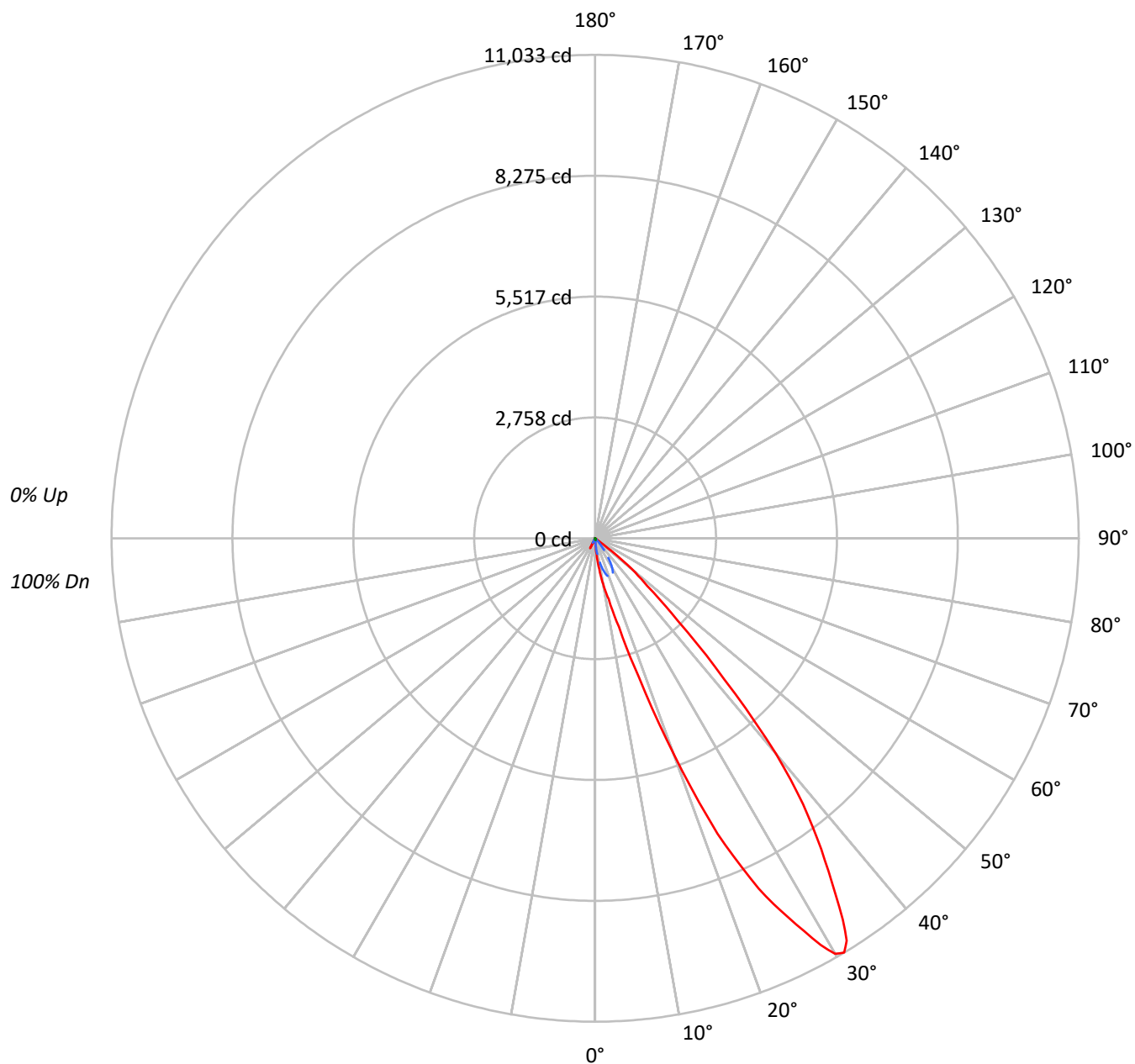
Input Watts (W): 29.12
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	30	10
RCR																					
0	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102
1	112	109	106	104		110	107	104	102		103	101	99		99	97	96		96	94	93
2	105	100	95	91		103	98	93	90		94	91	88		91	88	86		89	86	84
3	99	91	85	80		96	89	84	79		87	82	78		84	80	77		82	78	76
4	92	83	76	71		90	82	75	70		79	74	70		77	72	69		75	71	68
5	86	75	68	63		84	74	68	63		73	67	62		71	66	62		69	65	61
6	80	69	62	56		78	68	61	56		66	60	56		65	59	55		63	59	55
7	74	63	56	50		73	62	55	50		61	55	50		59	54	50		58	53	49
8	69	58	50	45		68	57	50	45		56	49	45		55	49	45		54	48	44
9	65	53	46	41		63	52	45	41		51	45	40		50	44	40		49	44	40
10	60	49	41	37		59	48	41	37		47	41	37		46	41	36		45	40	36

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	2083	2083	2083
5°	20218	1838	759
10°	59791	1314	473
15°	118690	891	409
20°	306166	723	572
25°	533589	871	4119
30°	693113	912	2323
35°	621046	395	221
40°	459139	143	0
45°	206766	155	0
50°	93285	171	0
55°	8325	191	0
60°	1009	219	0
65°	428	337	0
70°	321	417	0
75°	0	551	0
80°	0	821	221
85°	0	1635	440



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	15.1	0.9
10°-20°	141.5	8.4
20°-30°	558.8	33.2
30°-40°	674.4	40.1
40°-50°	261.7	15.6
50°-60°	23.0	1.4
60°-70°	2.2	0.1
70°-80°	2.1	0.1
80°-90°	1.9	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°	715.5	42.6
0°-40°	1389.8	82.7
0°-60°	1674.5	99.6
0°-90°	1680.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1680.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	38	38	38	38	38	
5°	367	180	33	16	14	58
15°	2091	791	16	10	7	766
25°	8822	936	14	46	68	4034
35°	9280	476	6	6	3	5704
45°	2667	33	2	1	0	2343
55°	87	4	2	1	0	210
65°	3	3	3	2	0	4
75°	0	3	3	3	0	1
85°	0	3	3	3	1	0
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0
2.5°	119.2	113.3	106.8	109.4	110.7	114.0	111.3	101.5	107.4	102.8	98.9
5°	367.4	360.9	348.4	350.4	346.5	351.1	340.6	319.6	323.5	317.0	300.0
7.5°	716.5	689.0	668.7	670.0	658.2	663.5	643.8	607.8	603.9	570.5	565.2
10°	1074.1	1060.4	1036.1	1032.9	1011.9	1014.5	983.7	935.9	922.8	884.2	861.9
12.5°	1425.2	1402.3	1368.2	1361.0	1326.9	1327.6	1285.7	1232.0	1212.3	1172.4	1141.6
15°	2091.3	2058.5	1980.6	1951.1	1856.8	1842.4	1738.9	1617.1	1558.1	1489.4	1399.0
17.5°	3320.6	3299.6	3147.0	3062.6	2871.3	2681.4	2569.4	2306.1	2152.2	1959.6	1792.6
20°	5248.1	5286.8	5020.2	4831.6	4476.6	4075.8	3792.8	3313.4	2993.1	2661.1	2346.7
22.5°	7298.1	7314.5	7041.4	6806.3	6393.0	5842.2	5190.5	4608.9	4022.1	3451.6	2932.9
25°	8821.5	8774.4	8473.8	8191.5	7756.6	7194.0	6560.7	5783.9	4981.6	4198.2	3438.5
26°	9286.6	9261.0	8959.7	8621.8	8143.0	7571.9	6913.0	6129.0	5281.5	4438.0	3593.1
27°	9717.5	9701.1	9374.3	8998.4	8462.0	7864.0	7174.3	6391.0	5508.1	4623.3	3705.1
28°	10154.4	10136.0	9740.4	9304.2	8721.3	8071.6	7355.1	6565.9	5654.2	4732.0	3751.6
29°	10616.1	10580.7	10075.1	9528.9	8894.2	8192.8	7449.4	6645.8	5704.0	4758.9	3739.8
30°	10949.5	10894.5	10316.8	9671.0	8965.0	8230.8	7459.9	6643.8	5673.2	4703.2	3664.5
31°	11033.3	10977.6	10384.3	9669.1	8913.2	8173.1	7384.6	6550.8	5544.8	4568.3	3537.4
32°	10830.3	10779.2	10213.3	9448.3	8749.5	8034.3	7234.6	6378.6	5345.7	4366.6	3365.1
33°	10377.1	10338.4	9850.5	9158.2	8515.0	7837.2	7019.8	6133.6	5062.8	4109.8	3162.8
34°	9805.3	9777.1	9401.8	8817.0	8217.7	7566.7	6741.4	5810.7	4690.1	3819.0	2942.0
35°	9280.0	9259.1	8955.2	8436.4	7877.8	7232.0	6389.1	5413.2	4306.3	3506.0	2706.3
36°	8774.4	8756.7	8492.8	8010.7	7471.7	6839.7	5945.7	4937.7	3894.3	3181.1	2462.0
37°	8246.5	8230.8	8004.2	7545.7	7015.2	6370.7	5419.1	4431.4	3475.8	2856.9	2211.1
38°	7699.0	7685.9	7478.2	7021.1	6482.7	5797.6	4818.5	3908.1	3067.8	2540.6	1985.8
39°	7087.9	7076.8	6885.5	6406.1	5831.0	5122.4	4200.2	3397.9	2680.7	2233.4	1767.7
40°	6415.9	6400.8	6209.6	5673.8	5092.9	4427.5	3606.2	2929.6	2315.3	1946.5	1575.8
42.5°	4362.0	4345.6	4203.5	3891.7	3332.4	2904.7	2389.9	1960.9	1640.7	1418.6	1227.4
45°	2667.0	2668.9	2594.3	2401.7	2065.1	1827.3	1547.7	1342.7	1198.6	1113.4	980.5
47.5°	1613.1	1613.1	1579.7	1481.5	1330.2	1235.2	1119.3	1023.7	913.7	829.8	685.7
50°	1093.8	1094.4	1043.3	1048.6	947.7	888.8	778.1	661.5	553.4	431.6	307.8
51°	809.5	813.5	766.3	787.9	677.2	627.4	522.7	423.8	328.1	233.8	134.9
52°	495.1	502.3	470.3	489.9	425.7	353.0	267.9	197.8	133.0	93.0	64.8
53°	229.9	235.8	219.4	228.6	190.6	148.7	112.7	91.7	73.4	59.6	43.9
54°	121.8	123.1	117.9	115.3	104.8	92.3	76.6	63.5	49.8	40.0	29.5
55°	87.1	87.1	84.5	81.9	73.4	62.9	51.1	43.2	32.7	26.2	19.0
57.5°	26.9	26.9	26.9	25.5	22.3	19.0	15.1	13.1	10.5	9.8	7.9
60°	9.2	9.2	9.2	8.5	7.9	7.2	6.5	5.9	5.2	5.2	4.6
61°	6.5	6.5	6.5	6.5	5.9	5.9	5.2	4.6	3.9	4.6	3.9
62°	5.2	5.9	5.2	5.2	5.2	4.6	3.9	3.9	3.3	3.9	3.3
63°	4.6	4.6	4.6	4.6	3.9	3.9	3.3	3.3	2.6	3.3	3.3
64°	3.9	3.9	3.9	3.9	3.3	3.3	2.6	2.6	2.0	2.6	2.6
65°	3.3	3.3	3.3	3.3	2.6	2.6	2.6	2.0	2.0	2.6	2.6
66°	2.6	2.6	2.6	2.6	2.6	2.0	2.0	2.0	1.3	2.0	2.0



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CANDELA DISTRIBUTION (continued):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
72.5°	1.3	1.3	1.3	1.3	0.7	0.7	0.7	0.7	0.7	1.3	1.3
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7
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):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0	38.0
2.5°	95.0	88.4	87.1	87.1	73.4	76.0	71.4	68.1	47.8	36.7	27.5
5°	290.1	266.6	256.7	248.2	210.9	207.6	184.7	179.5	64.2	33.4	21.0
7.5°	541.0	505.0	482.0	459.8	399.5	383.1	343.8	334.0	87.1	28.2	16.4
10°	826.5	774.8	734.9	681.8	603.9	569.8	512.2	491.2	106.1	23.6	15.7
12.5°	1095.1	1036.1	981.8	911.7	806.2	751.9	675.9	649.1	113.3	19.6	14.4
15°	1326.9	1248.3	1180.9	1105.6	987.7	918.9	825.9	791.2	107.4	15.7	12.4
17.5°	1621.0	1488.1	1370.8	1265.4	1137.0	1053.2	945.1	888.8	87.1	13.8	11.1
20°	2055.9	1788.0	1581.7	1411.4	1233.3	1129.1	1009.3	941.2	62.9	12.4	11.1
22.5°	2465.2	2082.7	1766.4	1522.8	1283.1	1158.6	1034.2	958.8	44.5	12.4	13.1
25°	2799.3	2304.8	1894.1	1596.1	1310.6	1164.5	1025.0	935.9	34.7	14.4	25.5
26°	2892.9	2359.8	1919.0	1602.0	1306.6	1156.0	1009.3	915.0	30.8	19.6	47.8
27°	2951.2	2384.7	1919.7	1592.8	1292.2	1139.0	985.7	886.8	26.9	30.1	80.6
28°	2963.0	2372.9	1897.4	1567.3	1267.3	1116.0	959.5	852.7	24.9	38.0	91.7
29°	2930.9	2331.0	1856.8	1530.0	1237.2	1088.5	928.1	815.4	21.6	28.8	59.6
30°	2858.9	2261.5	1797.2	1482.2	1205.1	1057.7	889.4	770.9	17.7	14.4	26.9
31°	2750.8	2165.9	1723.8	1425.8	1169.1	1018.5	842.9	721.1	15.1	9.8	15.7
32°	2613.9	2051.3	1642.0	1368.2	1128.5	970.6	788.6	665.4	13.8	7.9	13.1
33°	2456.7	1930.8	1557.5	1309.9	1080.0	913.7	730.3	605.8	12.4	8.5	13.1
34°	2285.1	1807.7	1461.9	1249.0	1023.7	851.4	668.1	535.8	11.1	7.9	9.8
35°	2099.1	1680.0	1376.1	1195.3	960.2	784.0	604.5	476.1	9.8	5.9	6.5
36°	1938.7	1555.5	1292.9	1127.2	890.7	714.6	539.0	412.0	8.5	3.9	4.6
37°	1763.8	1438.9	1215.6	1056.4	816.1	643.2	473.5	348.4	7.9	2.6	3.9
38°	1600.7	1331.5	1138.3	975.2	739.4	571.1	406.7	286.2	7.2	2.6	3.3
39°	1452.7	1233.9	1066.3	888.8	658.9	495.8	339.3	224.6	6.5	2.0	3.3
40°	1325.6	1146.8	979.8	797.7	575.7	421.1	271.8	166.4	5.9	2.0	3.3
42.5°	1078.1	920.2	739.4	563.9	372.7	238.4	121.8	60.9	4.6	2.0	2.6
45°	823.9	655.0	487.9	339.3	191.9	92.3	45.2	33.4	3.9	2.0	2.6
47.5°	535.1	393.0	262.0	148.0	64.2	37.3	23.6	17.0	3.3	2.0	2.6
50°	197.8	109.4	57.6	36.0	24.9	15.7	10.5	9.8	3.3	2.0	2.6
51°	81.2	53.1	36.0	24.2	15.7	11.1	8.5	8.5	3.3	2.0	2.6
52°	48.5	33.4	24.2	17.7	11.8	8.5	6.5	7.2	3.3	2.0	2.6
53°	32.1	22.9	17.7	13.8	9.2	6.5	4.6	5.2	3.3	2.0	2.6
54°	21.6	16.4	13.1	10.5	6.5	5.2	2.6	4.6	2.6	2.0	2.6
55°	15.1	11.8	9.8	7.9	4.6	3.3	2.0	3.9	2.6	2.0	2.6
57.5°	6.5	5.9	5.2	4.6	2.0	1.3	0.7	3.3	2.6	2.0	2.6
60°	4.6	3.9	3.3	3.3	0.7	0.7	0.0	2.6	2.6	2.0	2.6
61°	3.9	3.3	3.3	2.6	0.7	0.7	0.0	2.6	3.3	2.0	2.6
62°	3.3	3.3	2.6	2.6	0.7	0.0	0.0	2.6	3.3	2.0	3.3
63°	2.6	2.6	2.6	2.6	0.7	0.0	0.0	2.6	3.3	2.0	3.3
64°	2.6	2.6	2.6	2.6	0.0	0.0	0.0	2.6	3.3	2.0	3.3
65°	2.6	2.0	2.0	2.0	0.0	0.0	0.0	2.6	3.3	2.6	3.3
66°	2.0	2.0	2.0	2.0	0.0	0.0	0.0	2.6	3.3	2.6	3.3



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CATALOG NUMBER: LDA6A20840D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
72.5°	1.3	1.3	1.3	1.3	0.0	0.0	0.0	2.0	3.3	2.6	3.9
75°	0.7	1.3	1.3	1.3	0.0	0.0	0.0	2.6	3.3	2.6	3.9
77.5°	0.7	1.3	1.3	1.3	0.0	0.0	0.0	2.6	3.3	2.6	3.9
80°	0.7	1.3	1.3	1.3	0.0	0.0	0.0	2.6	3.3	2.6	3.9
82.5°	0.7	1.3	1.3	1.3	0.0	0.0	0.0	2.6	3.3	2.6	3.9
85°	0.7	1.3	1.3	1.3	0.0	0.0	0.0	2.6	3.3	2.6	3.9
87.5°	0.7	1.3	1.3	1.3	0.0	0.0	0.0	2.6	3.3	2.6	3.9
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: P175474

CATALOG NUMBER: LDA6A20840D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	38.0	38.0	38.0
2.5°	22.9	21.0	19.6
5°	16.4	15.1	13.8
7.5°	13.8	11.8	11.1
10°	12.4	9.2	8.5
12.5°	10.5	7.9	7.2
15°	9.8	7.9	7.2
17.5°	9.8	7.9	7.2
20°	10.5	9.8	9.8
22.5°	15.1	16.4	17.0
25°	45.8	58.9	68.1
26°	107.4	161.1	216.1
27°	163.1	237.7	253.5
28°	146.7	170.3	165.7
29°	70.7	79.9	72.7
30°	31.4	37.3	36.7
31°	20.3	22.9	22.3
32°	17.0	15.7	15.1
33°	13.8	11.1	9.2
34°	9.2	7.2	5.9
35°	5.9	3.9	3.3
36°	3.9	2.0	1.3
37°	2.6	1.3	0.7
38°	2.6	0.7	0.0
39°	2.0	0.7	0.0
40°	2.0	0.7	0.0
42.5°	2.0	0.0	0.0
45°	1.3	0.0	0.0
47.5°	1.3	0.0	0.0
50°	2.0	0.7	0.0
51°	2.0	0.0	0.0
52°	2.0	0.0	0.0
53°	1.3	0.0	0.0
54°	1.3	0.0	0.0
55°	1.3	0.0	0.0
57.5°	1.3	0.0	0.0
60°	1.3	0.0	0.0
61°	2.0	0.0	0.0
62°	2.0	0.0	0.0
63°	2.0	0.0	0.0
64°	2.0	0.7	0.0
65°	2.0	0.7	0.0
66°	2.0	0.7	0.0



TEST NUMBER: P175474

CATALOG NUMBER: LDA6A20840D010TE LARL20NF 6LAL1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	2.6	0.7	0.0
75°	2.6	0.7	0.0
77.5°	2.6	0.7	0.0
80°	2.6	1.3	0.7
82.5°	2.6	1.3	0.7
85°	2.6	1.3	0.7
87.5°	2.6	1.3	0.7
90°	0.0	0.0	0.0



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— 0°-180° - - 45°-225° - - - 90°-270°







67.5°	2.0	2.0	2.0	2.0	2.0	2.0	1.3	1.3	1.3	2.0	2.0
70°	2.0	2.0	1.3	1.3	1.3	1.3	1.3	0.7	0.7	2.0	2.0





67.5°	2.0	2.0	2.0	2.0	0.0	0.0	0.0	2.6	3.3	2.6	3.3
70°	2.0	2.0	2.0	2.0	0.0	0.0	0.0	2.6	3.3	2.6	3.9





67.5°	2.6	0.7	0.0
70°	2.6	0.7	0.0



(END OF REPORT)