

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: P170680

Luminaire Tested: **LDA4A18840D010TE LAR25NF 4LA1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P170680
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P25649)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDA4A18840D010TE LAR25NF 4LA1 30° Tilt
Description: PORTFOLIO 4" Adjustable Reflector, Self-flanged Trim Ring, 25°
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: 1794.9 lumens
Efficiency: N/A
Efficacy: 61.6 lumens/watt
Spacing Criteria (0/90/45): 2.56 / 1.01 / 1.3
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

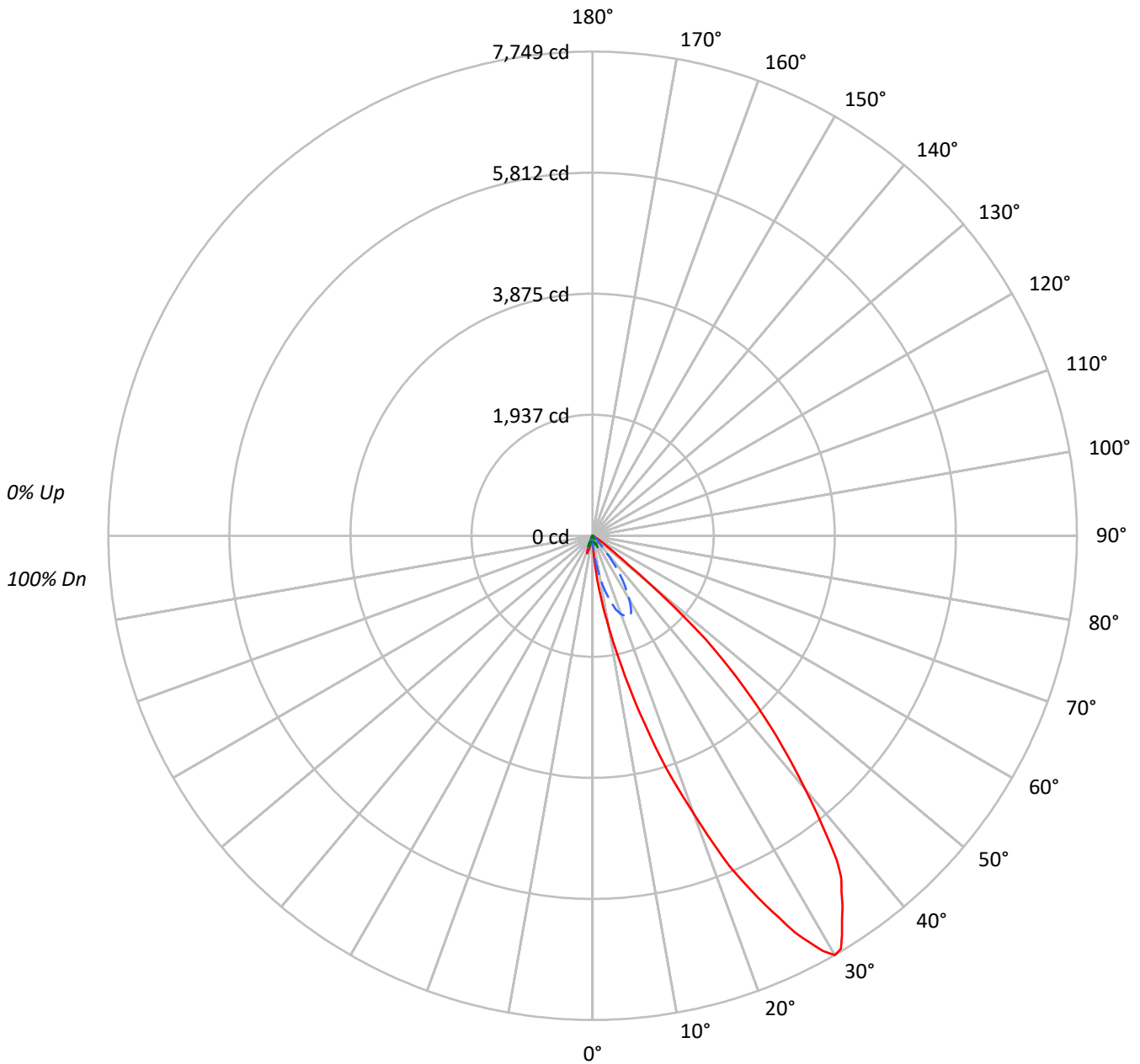
Input Watts (W): 29.12
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P170680

CATALOG NUMBER: LDA4A18840D010TE LAR25NF 4LA1 30° Tilt

Luminous Intensity Polar Plot





TEST NUMBER: P170680

CATALOG NUMBER: LDA4A18840D010TE LAR25NF 4LA1 30° Tilt

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	104	102	103	101	99	99	97	96	96	94	93	91								
2	105	100	95	91	103	98	93	90	95	91	88	91	88	86	89	86	84	82								
3	99	91	85	80	96	89	84	79	87	82	78	84	80	77	82	78	76	74								
4	92	83	76	71	90	82	75	71	79	74	70	77	73	69	75	71	68	66								
5	86	76	69	63	84	75	68	63	73	67	62	71	66	62	69	65	61	60								
6	80	69	62	57	78	68	61	56	67	61	56	65	60	56	64	59	55	53								
7	75	63	56	51	73	63	56	51	61	55	50	60	54	50	59	54	50	48								
8	70	58	51	46	68	58	51	46	56	50	46	55	49	45	54	49	45	43								
9	65	53	46	41	64	53	46	41	52	46	41	51	45	41	50	45	41	39								
10	61	49	42	38	60	49	42	37	48	42	37	47	41	37	46	41	37	36								

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	14678	14678	14678
5°	63741	13843	8382
10°	183815	12462	9118
15°	376654	13753	26318
20°	621406	25583	26659
25°	885201	16332	8928
30°	1103712	7164	3504
35°	1045789	3237	1551
40°	851760	1658	499
45°	596627	890	0
50°	223573	595	0
55°	47633	667	0
60°	9103	518	0
65°	2685	905	0
70°	757	1118	0
75°	0	1477	0
80°	0	2202	0
85°	0	4387	0



TEST NUMBER: P170680

CATALOG NUMBER: LDA4A18840D010TE LAR25NF 4LA1 30° Tilt

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	24.9	1.4
10°-20°	214.9	12.0
20°-30°	549.1	30.6
30°-40°	635.9	35.4
40°-50°	328.1	18.3
50°-60°	33.9	1.9
60°-70°	3.7	0.2
70°-80°	2.3	0.1
80°-90°	2.1	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°	788.9	44.0
0°-40°	1424.8	79.4
0°-60°	1786.8	99.5
0°-90°	1794.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1794.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	119	119	119	119	119	
5°	515	268	112	74	68	80
15°	2950	1080	108	144	206	903
25°	6504	1410	120	75	66	3022
35°	6945	771	22	12	10	4253
45°	3420	90	5	3	0	2561
55°	222	13	3	2	0	277
65°	9	3	3	2	0	12
75°	0	2	3	3	0	0
85°	0	2	3	3	0	0
90°	0	0	0	0	0	



TEST NUMBER: P170680

CATALOG NUMBER: LDA4A18840D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0
2.5°	205.1	197.9	192.8	194.9	206.1	193.8	194.9	190.8	188.7	186.7	181.5
5°	514.8	494.3	481.0	482.0	452.3	474.8	472.8	455.4	444.1	422.5	410.2
7.5°	966.1	922.0	906.6	901.5	904.6	883.0	873.8	851.2	821.5	782.5	760.0
10°	1467.6	1440.9	1431.7	1415.3	1414.3	1376.3	1353.8	1325.0	1265.6	1211.2	1171.2
12.5°	2138.3	2056.3	2041.9	2011.2	2003.0	1938.3	1891.2	1849.1	1749.6	1677.8	1614.3
15°	2949.6	2882.9	2898.3	2803.9	2778.3	2672.7	2584.5	2494.2	2333.2	2223.5	2110.6
17.5°	3870.5	3785.4	3795.7	3677.7	3465.4	3484.9	3356.7	3232.6	3006.0	2859.3	2685.0
20°	4734.1	4673.6	4677.7	4520.7	4449.0	4254.1	4082.8	3935.1	3633.6	3447.0	3216.2
22.5°	5727.9	5570.9	5541.2	5327.9	5201.7	4940.2	4701.2	4505.4	4140.3	3930.0	3647.0
25°	6504.2	6396.5	6314.5	6062.2	5886.8	5546.3	5269.4	4979.2	4540.2	4307.4	3971.0
26°	6795.5	6693.9	6588.3	6316.5	6119.6	5759.6	5458.1	5146.3	4676.6	4427.4	4061.3
27°	7124.7	6958.5	6831.4	6526.8	6313.5	5935.0	5577.1	5282.8	4780.2	4504.3	4118.7
28°	7357.5	7191.4	7023.2	6691.9	6461.1	6065.3	5693.0	5372.0	4840.7	4541.3	4142.3
29°	7596.5	7420.1	7174.9	6813.9	6562.7	6146.3	5759.6	5416.1	4858.2	4539.2	4130.0
30°	7749.3	7571.8	7254.9	6882.7	6617.0	6179.1	5778.1	5407.9	4830.5	4498.2	4084.9
31°	7713.4	7550.3	7235.5	6889.8	6611.9	6159.6	5744.3	5349.4	4760.7	4425.4	4002.8
32°	7533.9	7395.4	7156.5	6841.6	6555.5	6093.0	5665.3	5257.1	4660.2	4340.2	3903.3
33°	7325.7	7210.8	7045.7	6744.2	6457.0	5992.5	5556.6	5143.3	4544.3	4224.4	3783.4
34°	7151.4	7047.8	6895.0	6612.9	6322.7	5858.1	5419.2	4999.7	4412.0	4088.0	3641.8
35°	6945.2	6850.9	6709.3	6435.5	6136.0	5677.6	5246.9	4833.5	4256.1	3925.9	3477.7
36°	6765.7	6617.0	6473.4	6206.8	5908.4	5459.2	5043.8	4638.7	4079.7	3740.3	3293.1
37°	6487.8	6339.1	6185.3	5933.0	5638.6	5208.9	4818.2	4430.5	3878.7	3600.8	3096.2
38°	6072.4	6003.7	5849.9	5609.9	5336.1	4933.0	4571.0	4193.6	3652.1	3331.1	2887.0
39°	5684.8	5628.4	5478.6	5259.2	5005.8	4636.6	4297.2	3926.9	3396.7	3093.1	2666.5
40°	5289.9	5233.5	5093.0	4895.1	4667.4	4327.9	4005.9	3642.9	3129.0	2848.0	2445.0
42.5°	4354.6	4296.1	4266.4	4064.4	3823.4	3532.1	3233.6	2905.5	2468.6	2237.8	1921.9
45°	3420.3	3367.0	3255.2	3172.1	2956.7	2714.7	2471.6	2204.0	1881.9	1654.3	1358.9
47.5°	2445.0	2419.3	2423.4	2269.6	2064.5	1873.7	1672.7	1430.7	1145.6	859.4	630.7
50°	1165.1	1172.2	1201.0	1093.3	939.4	827.6	708.7	555.9	406.1	319.0	247.2
51°	754.8	763.0	787.6	710.7	598.9	523.0	447.2	361.0	288.2	245.1	195.9
52°	510.7	510.7	515.9	470.7	415.4	372.3	328.2	277.9	224.6	192.8	154.9
53°	383.6	382.5	384.6	354.8	316.9	285.1	254.3	217.4	177.4	150.8	120.0
54°	293.3	292.3	294.3	271.8	245.1	221.5	197.9	170.2	137.4	112.8	90.3
55°	221.5	221.5	224.6	207.2	186.7	168.2	150.8	127.2	101.5	82.0	65.6
57.5°	89.2	89.2	92.3	86.1	76.9	69.7	63.6	54.4	45.1	37.9	30.8
60°	36.9	37.9	39.0	35.9	33.8	31.8	29.7	26.7	23.6	19.5	16.4
61°	27.7	27.7	28.7	26.7	25.6	23.6	22.6	20.5	18.5	15.4	13.3
62°	20.5	20.5	21.5	20.5	19.5	18.5	17.4	16.4	14.4	12.3	10.3
63°	15.4	15.4	16.4	15.4	15.4	14.4	13.3	12.3	11.3	9.2	8.2
64°	12.3	12.3	12.3	11.3	11.3	11.3	10.3	10.3	8.2	7.2	6.2
65°	9.2	9.2	9.2	9.2	8.2	8.2	8.2	7.2	7.2	5.1	5.1
66°	7.2	7.2	7.2	6.2	6.2	6.2	6.2	6.2	5.1	4.1	3.1



TEST NUMBER: P170680

CATALOG NUMBER: LDA4A18840D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
72.5°	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
75°	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
77.5°	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
80°	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
82.5°	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
85°	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0



TEST NUMBER: P170680

CATALOG NUMBER: LDA4A18840D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0	119.0
2.5°	183.6	182.6	172.3	172.3	176.4	170.2	167.2	160.0	137.4	116.9	98.5
5°	406.1	394.8	360.0	349.7	348.7	320.0	303.6	267.7	156.9	111.8	85.1
7.5°	749.7	715.9	656.4	624.6	585.6	563.0	523.0	461.5	178.5	104.6	76.9
10°	1108.6	1070.7	982.5	926.1	896.4	823.5	756.9	672.8	200.0	99.5	75.9
12.5°	1519.9	1434.8	1350.7	1250.2	1161.0	1096.3	985.6	887.1	214.3	98.5	83.1
15°	1965.0	1858.3	1714.8	1579.4	1453.2	1360.9	1212.2	1079.9	219.5	107.7	108.7
17.5°	2463.4	2263.5	2056.3	1871.7	1698.4	1574.3	1389.7	1233.8	216.4	132.3	173.3
20°	2930.1	2664.5	2383.4	2127.0	1881.9	1720.9	1507.6	1338.4	217.4	194.9	233.8
22.5°	3300.3	2977.3	2634.7	2321.9	2011.2	1818.3	1585.5	1393.8	244.1	208.2	159.0
25°	3573.1	3192.6	2799.8	2439.8	2112.7	1896.3	1640.9	1410.2	227.7	120.0	90.3
26°	3645.9	3244.9	2830.6	2457.3	2125.0	1896.3	1632.7	1392.7	196.9	95.4	74.9
27°	3687.0	3268.5	2835.7	2449.1	2109.6	1874.8	1603.0	1357.9	161.0	80.0	63.6
28°	3692.1	3258.3	2810.1	2415.2	2066.5	1828.6	1549.6	1304.5	133.3	67.7	52.3
29°	3664.4	3220.3	2760.9	2358.8	2000.9	1760.9	1476.8	1238.9	113.8	58.5	44.1
30°	3605.9	3153.7	2686.0	2282.9	1915.8	1678.9	1391.7	1166.1	99.5	50.3	36.9
31°	3521.8	3062.4	2605.0	2192.7	1826.6	1596.8	1311.7	1092.2	88.2	42.0	30.8
32°	3413.1	2954.7	2500.4	2095.3	1746.6	1518.9	1234.8	1017.4	79.0	35.9	25.6
33°	3292.1	2832.6	2386.5	1993.7	1669.6	1438.9	1153.8	938.4	70.8	29.7	21.5
34°	3152.6	2698.3	2265.5	1892.2	1587.6	1350.7	1066.6	857.4	61.5	24.6	18.5
35°	2993.7	2548.6	2135.3	1799.9	1496.3	1255.3	975.3	771.2	54.4	21.5	15.4
36°	2821.4	2392.7	2004.0	1694.3	1397.9	1155.8	878.9	684.1	47.2	18.5	13.3
37°	2640.9	2230.6	1872.7	1574.3	1289.2	1050.2	779.4	589.7	41.0	15.4	11.3
38°	2450.1	2067.6	1745.5	1460.4	1174.3	936.4	677.9	486.1	35.9	13.3	10.3
39°	2255.2	1906.5	1619.4	1335.3	1056.3	824.6	580.5	377.4	31.8	11.3	9.2
40°	2064.5	1754.8	1486.1	1198.9	938.4	714.8	486.1	277.9	27.7	10.3	7.2
42.5°	1634.8	1347.6	1066.6	800.0	654.3	453.3	269.7	145.6	19.5	7.2	5.1
45°	1069.7	796.9	575.3	389.7	338.4	191.8	125.1	90.3	14.4	5.1	4.1
47.5°	443.0	323.1	224.6	162.0	131.3	102.6	80.0	58.5	10.3	4.1	4.1
50°	194.9	153.8	122.0	95.4	83.1	66.7	51.3	35.9	6.2	3.1	3.1
51°	155.9	124.1	95.4	75.9	67.7	54.4	42.0	28.7	6.2	3.1	3.1
52°	123.1	96.4	74.9	58.5	54.4	44.1	34.9	23.6	5.1	3.1	3.1
53°	94.4	72.8	56.4	46.2	43.1	35.9	28.7	19.5	4.1	3.1	3.1
54°	69.7	55.4	44.1	35.9	34.9	28.7	23.6	16.4	4.1	3.1	3.1
55°	51.3	43.1	33.8	28.7	27.7	23.6	19.5	13.3	4.1	3.1	3.1
57.5°	26.7	22.6	18.5	16.4	16.4	15.4	13.3	8.2	3.1	2.1	3.1
60°	14.4	12.3	10.3	9.2	11.3	10.3	9.2	5.1	3.1	2.1	3.1
61°	11.3	10.3	8.2	7.2	9.2	8.2	8.2	4.1	3.1	3.1	3.1
62°	9.2	8.2	7.2	6.2	8.2	7.2	7.2	4.1	3.1	3.1	3.1
63°	7.2	6.2	5.1	5.1	7.2	7.2	6.2	3.1	3.1	3.1	3.1
64°	5.1	5.1	4.1	4.1	6.2	6.2	5.1	3.1	3.1	3.1	3.1
65°	4.1	4.1	3.1	3.1	5.1	5.1	5.1	3.1	3.1	3.1	3.1
66°	3.1	3.1	3.1	2.1	4.1	5.1	5.1	2.1	3.1	3.1	3.1



TEST NUMBER: P170680

CATALOG NUMBER: LDA4A18840D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
72.5°	1.0	1.0	1.0	1.0	3.1	4.1	4.1	2.1	3.1	3.1	3.1
75°	1.0	1.0	1.0	1.0	3.1	4.1	4.1	2.1	3.1	3.1	3.1
77.5°	1.0	1.0	1.0	1.0	3.1	4.1	4.1	2.1	3.1	3.1	4.1
80°	1.0	1.0	1.0	1.0	3.1	4.1	4.1	2.1	3.1	3.1	4.1
82.5°	1.0	1.0	1.0	1.0	3.1	4.1	4.1	2.1	3.1	3.1	4.1
85°	1.0	1.0	1.0	1.0	3.1	4.1	4.1	2.1	3.1	3.1	4.1
87.5°	1.0	1.0	1.0	1.0	3.1	4.1	4.1	2.1	3.1	3.1	4.1
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: P170680

CATALOG NUMBER: LDA4A18840D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	119.0	119.0	119.0
2.5°	89.2	84.1	83.1
5°	73.8	68.7	67.7
7.5°	67.7	63.6	62.6
10°	69.7	70.8	72.8
12.5°	89.2	98.5	106.7
15°	143.6	180.5	206.1
17.5°	250.2	276.9	294.3
20°	219.5	202.0	203.1
22.5°	123.1	110.8	109.7
25°	74.9	67.7	65.6
26°	62.6	56.4	54.4
27°	51.3	46.2	44.1
28°	42.0	37.9	36.9
29°	35.9	30.8	29.7
30°	29.7	25.6	24.6
31°	24.6	21.5	20.5
32°	21.5	18.5	16.4
33°	17.4	15.4	14.4
34°	15.4	12.3	11.3
35°	12.3	10.3	10.3
36°	11.3	9.2	8.2
37°	9.2	7.2	7.2
38°	8.2	6.2	5.1
39°	7.2	5.1	4.1
40°	6.2	4.1	3.1
42.5°	4.1	2.1	1.0
45°	3.1	1.0	0.0
47.5°	2.1	1.0	0.0
50°	2.1	0.0	0.0
51°	2.1	0.0	0.0
52°	2.1	0.0	0.0
53°	2.1	0.0	0.0
54°	2.1	0.0	0.0
55°	2.1	0.0	0.0
57.5°	2.1	0.0	0.0
60°	2.1	0.0	0.0
61°	2.1	0.0	0.0
62°	2.1	0.0	0.0
63°	2.1	1.0	0.0
64°	2.1	1.0	0.0
65°	2.1	1.0	0.0
66°	2.1	1.0	0.0



TEST NUMBER: P170680

CATALOG NUMBER: LDA4A18840D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	3.1	1.0	0.0
75°	3.1	1.0	0.0
77.5°	3.1	1.0	0.0
80°	3.1	1.0	0.0
82.5°	3.1	1.0	0.0
85°	3.1	1.0	0.0
87.5°	2.1	1.0	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.1	2.1
70°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	1.0	1.0





67.5°	2.1	2.1	2.1	2.1	4.1	4.1	4.1	2.1	3.1	3.1	3.1
70°	1.0	1.0	1.0	2.1	3.1	4.1	4.1	2.1	3.1	3.1	3.1





67.5°	2.1	1.0	0.0
70°	2.1	1.0	0.0



(END OF REPORT)