

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: P170903

Luminaire Tested: **LDA4A18835D010TE LAR15SP 4LA1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P170903
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P25648)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDA4A18835D010TE LAR15SP 4LA1 30° Tilt
Description: PORTFOLIO 4" Adjustable Reflector, Self-flanged Trim Ring, 15° Spot Optic, at 30° tilt
Light Source: (1) HIGH LUMEN LED 80CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1611.0 lumens
Efficiency: N/A
Efficacy: 55.3 lumens/watt
Spacing Criteria (0/90/45): 2.52 / 1.04 / 1.28
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

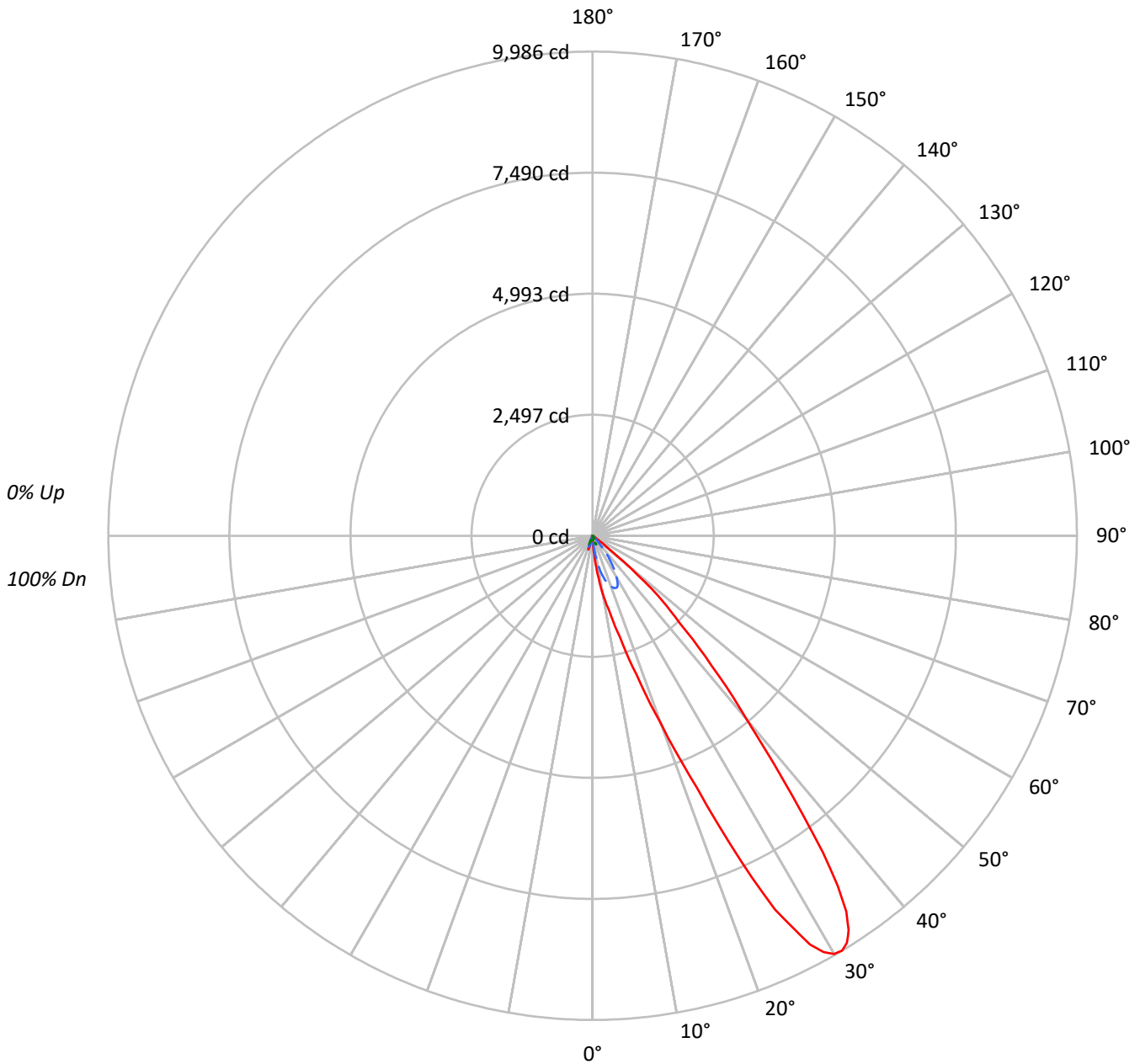
Input Watts (W): 29.12
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	104	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	86	84	82					82			
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74					74			
4	92	83	77	71	90	82	76	71	80	74	70	78	73	69	76	72	68	67					67			
5	86	76	69	64	84	75	68	63	73	67	63	71	66	62	70	65	62	60					60			
6	80	69	62	57	79	69	62	57	67	61	56	65	60	56	64	59	56	54					54			
7	75	64	56	51	73	63	56	51	62	55	51	60	55	50	59	54	50	49					49			
8	70	58	51	46	69	58	51	46	57	50	46	55	50	46	54	49	45	44					44			
9	65	54	47	42	64	53	46	42	52	46	41	51	45	41	50	45	41	40					40			
10	61	49	42	38	60	49	42	38	48	42	38	47	41	37	46	41	37	36					36			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	11594	11594	11594
5°	51991	10896	7058
10°	153905	10020	9018
15°	274752	11876	25412
20°	544237	23365	27302
25°	1059051	15243	7758
30°	1418604	5697	2706
35°	1327398	2409	1054
40°	795437	1127	322
45°	441413	698	0
50°	161918	576	0
55°	24730	430	0
60°	5427	493	0
65°	1751	584	0
70°	361	721	0
75°	0	1430	0
80°	0	2131	0
85°	0	4246	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	20.6	1.3
10°-20°	174.0	10.8
20°-30°	519.4	32.2
30°-40°	615.2	38.2
40°-50°	255.2	15.8
50°-60°	19.8	1.2
60°-70°	2.7	0.2
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°	714.1	44.3
0°-40°	1329.3	82.5
0°-60°	1604.3	99.6
0°-90°	1611.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1611.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	94	94	94	94	94	
5°	420	212	88	61	57	66
15°	2152	909	93	139	199	710
25°	7782	1181	112	65	57	3554
35°	8815	658	16	9	7	5109
45°	2530	58	4	3	0	2063
55°	115	8	2	1	0	168
65°	6	2	2	2	0	7
75°	0	2	3	2	0	0
85°	0	2	3	2	0	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°	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0
2.5°	163.0	155.0	159.0	152.0	156.0	149.0	144.0	149.0	149.0	145.0	139.0
5°	419.9	417.9	425.9	406.9	411.9	390.9	372.9	377.9	373.9	360.9	337.9
7.5°	799.9	791.9	800.9	773.9	774.9	739.9	712.9	718.9	700.9	678.9	638.9
10°	1228.8	1217.8	1227.8	1195.8	1189.8	1140.8	1102.8	1108.8	1067.8	1031.8	970.8
12.5°	1600.7	1599.7	1567.7	1573.7	1561.7	1486.7	1462.7	1464.7	1408.7	1368.8	1295.8
15°	2151.6	2172.6	2178.6	2137.6	2063.6	1927.7	1867.7	1844.7	1753.7	1686.7	1581.7
17.5°	2998.5	3027.5	2928.5	2952.5	2830.5	2617.5	2498.5	2427.6	2256.6	2130.6	1940.6
20°	4146.2	4121.3	3978.3	3960.3	3752.3	3478.4	3228.4	3094.4	2831.5	2647.5	2370.6
22.5°	5628.0	5609.0	5364.0	5255.0	4820.1	4434.2	4110.3	3774.3	3383.4	3137.4	2761.5
25°	7781.6	7694.6	7222.7	6912.7	6147.9	5492.0	4952.1	4430.2	3831.3	3564.4	3086.4
26°	8574.4	8553.4	8061.5	7653.6	6731.8	5917.9	5190.1	4667.2	4007.3	3695.3	3178.4
27°	9050.4	9217.3	8759.4	8297.5	7289.7	6314.9	5471.0	4858.1	4144.2	3787.3	3237.4
28°	9544.3	9652.2	9242.3	8662.4	7736.6	6630.8	5684.0	4987.1	4228.2	3832.3	3257.4
29°	9816.2	9920.2	9539.3	8995.4	8029.5	6835.8	5809.9	5044.1	4259.2	3831.3	3239.4
30°	9960.2	10057.2	9685.2	9157.3	8150.5	6899.7	5836.9	5021.1	4229.2	3785.3	3188.4
31°	9986.2	10067.2	9700.2	9152.3	8104.5	6820.8	5761.0	4926.1	4149.2	3700.3	3111.4
32°	9898.2	9961.2	9588.3	9004.4	7897.6	6620.8	5603.0	4779.1	4027.3	3594.3	3012.5
33°	9692.2	9805.2	9350.3	8705.4	7537.6	6324.9	5379.0	4587.2	3875.3	3456.4	2891.5
34°	9351.3	9423.3	8952.4	8237.5	7057.7	5964.9	5104.1	4364.2	3701.3	3293.4	2754.5
35°	8815.4	8879.4	8358.5	7605.6	6510.8	5559.0	4790.1	4118.3	3506.4	3110.4	2602.5
36°	8073.5	8134.5	7589.6	6903.7	5958.9	5136.1	4459.2	3850.3	3295.4	2914.5	2441.6
37°	7206.7	7259.7	6774.8	6214.9	5417.0	4708.1	4124.3	3578.4	3072.4	2714.5	2288.6
38°	6368.8	6416.8	6024.9	5569.0	4894.1	4290.2	3790.3	3296.4	2842.5	2513.5	2127.6
39°	5613.0	5655.0	5339.0	4963.1	4396.2	3889.3	3457.4	3016.5	2611.5	2312.6	1961.6
40°	4940.1	4976.1	4716.1	4407.2	3944.3	3514.4	3133.4	2745.5	2385.6	2117.6	1806.7
42.5°	3626.3	3634.3	3479.4	3297.4	2937.5	2690.5	2419.6	2139.6	1876.7	1692.7	1494.7
45°	2530.5	2629.5	2528.5	2407.6	2149.6	1994.6	1821.7	1652.7	1500.7	1323.8	1127.8
47.5°	1819.7	1823.7	1763.7	1687.7	1483.7	1377.7	1235.8	1030.8	879.8	628.9	466.9
50°	843.8	796.9	799.9	747.9	666.9	529.9	442.9	315.9	252.0	180.0	145.0
51°	501.9	466.9	471.9	434.9	380.9	296.9	252.0	202.0	175.0	136.0	112.0
52°	292.9	280.9	279.9	263.0	224.0	206.0	182.0	152.0	133.0	105.0	87.0
53°	213.0	205.0	205.0	194.0	167.0	155.0	138.0	117.0	102.0	80.0	66.0
54°	159.0	153.0	153.0	146.0	135.0	116.0	104.0	87.0	76.0	62.0	49.0
55°	115.0	111.0	111.0	106.0	98.0	84.0	75.0	63.0	56.0	45.0	36.0
57.5°	48.0	46.0	46.0	44.0	42.0	36.0	34.0	29.0	25.0	22.0	18.0
60°	22.0	21.0	22.0	21.0	19.0	20.0	17.0	15.0	14.0	12.0	10.0
61°	17.0	16.0	16.0	16.0	14.0	14.0	13.0	12.0	11.0	9.0	8.0
62°	13.0	12.0	12.0	12.0	11.0	11.0	10.0	9.0	9.0	7.0	6.0
63°	10.0	9.0	9.0	9.0	8.0	8.0	8.0	7.0	7.0	6.0	5.0
64°	7.0	7.0	7.0	7.0	7.0	6.0	6.0	6.0	5.0	4.0	4.0
65°	6.0	5.0	6.0	5.0	5.0	5.0	5.0	5.0	4.0	3.0	3.0
66°	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	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°	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
75°	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	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



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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°	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0	94.0
2.5°	136.0	140.0	137.0	129.0	133.0	131.0	127.0	124.0	106.0	92.0	78.0
5°	320.9	323.9	306.9	276.9	267.0	251.0	228.0	212.0	120.0	88.0	69.0
7.5°	606.9	586.9	570.9	514.9	490.9	453.9	409.9	378.9	137.0	83.0	64.0
10°	918.8	886.8	853.8	771.9	728.9	671.9	608.9	572.9	155.0	80.0	64.0
12.5°	1227.8	1184.8	1124.8	1034.8	973.8	896.8	810.9	746.9	168.0	82.0	74.0
15°	1495.7	1443.7	1377.7	1275.8	1204.8	1108.8	996.8	908.8	174.0	93.0	103.0
17.5°	1787.7	1693.7	1584.7	1454.7	1376.8	1265.8	1139.8	1032.8	174.0	118.0	165.0
20°	2123.6	1951.6	1776.7	1594.7	1484.7	1368.8	1233.8	1118.8	181.0	178.0	227.0
22.5°	2436.6	2199.6	1952.6	1715.7	1562.7	1436.7	1299.8	1167.8	210.0	196.0	151.0
25°	2679.5	2378.6	2087.6	1799.7	1626.7	1486.7	1339.8	1180.8	192.0	112.0	82.0
26°	2742.5	2417.6	2114.6	1809.7	1629.7	1485.7	1335.8	1166.8	161.0	89.0	66.0
27°	2775.5	2430.6	2116.6	1800.7	1617.7	1468.7	1313.8	1137.8	129.0	72.0	54.0
28°	2775.5	2415.6	2095.6	1775.7	1586.7	1436.7	1275.8	1091.8	105.0	59.0	43.0
29°	2747.5	2376.6	2053.6	1737.7	1544.7	1391.7	1223.8	1037.8	89.0	49.0	35.0
30°	2693.5	2319.6	1997.6	1688.7	1490.7	1340.8	1166.8	981.8	77.0	40.0	28.0
31°	2617.5	2255.6	1928.6	1635.7	1440.7	1293.8	1114.8	924.8	67.0	32.0	23.0
32°	2526.5	2175.6	1857.7	1580.7	1399.7	1249.8	1060.8	864.8	58.0	27.0	20.0
33°	2421.6	2085.6	1783.7	1526.7	1359.8	1199.8	1001.8	799.9	50.0	22.0	17.0
34°	2305.6	1986.6	1707.7	1468.7	1310.8	1136.8	932.8	730.9	43.0	19.0	14.0
35°	2179.6	1875.7	1629.7	1409.7	1255.8	1066.8	858.8	657.9	37.0	16.0	12.0
36°	2043.6	1771.7	1553.7	1350.8	1187.8	990.8	777.9	582.9	32.0	13.0	11.0
37°	1907.7	1673.7	1478.7	1287.8	1108.8	904.8	692.9	504.9	28.0	11.0	9.0
38°	1778.7	1578.7	1404.7	1214.8	1016.8	809.9	604.9	426.9	24.0	10.0	8.0
39°	1657.7	1486.7	1328.8	1127.8	921.8	717.9	519.9	345.9	21.0	9.0	7.0
40°	1548.7	1399.7	1245.8	1030.8	823.9	623.9	433.9	258.0	18.0	7.0	6.0
42.5°	1318.8	1160.8	957.8	718.9	556.9	361.9	202.0	96.0	13.0	5.0	5.0
45°	870.8	669.9	454.9	271.0	183.0	110.0	82.0	58.0	10.0	4.0	4.0
47.5°	290.9	185.0	135.0	97.0	83.0	66.0	53.0	36.0	7.0	3.0	3.0
50°	111.0	90.0	74.0	56.0	50.0	40.0	32.0	21.0	5.0	3.0	3.0
51°	87.0	71.0	58.0	44.0	40.0	32.0	26.0	18.0	4.0	3.0	3.0
52°	67.0	55.0	45.0	34.0	32.0	26.0	22.0	15.0	4.0	2.0	3.0
53°	51.0	42.0	34.0	26.0	25.0	21.0	18.0	12.0	3.0	2.0	3.0
54°	38.0	32.0	27.0	21.0	21.0	18.0	15.0	10.0	3.0	2.0	3.0
55°	29.0	24.0	21.0	16.0	17.0	15.0	13.0	8.0	3.0	2.0	3.0
57.5°	15.0	14.0	12.0	10.0	11.0	10.0	9.0	5.0	3.0	2.0	3.0
60°	9.0	8.0	7.0	6.0	7.0	7.0	7.0	3.0	3.0	2.0	3.0
61°	7.0	6.0	5.0	5.0	6.0	6.0	6.0	3.0	3.0	2.0	3.0
62°	5.0	5.0	4.0	4.0	6.0	5.0	5.0	3.0	3.0	2.0	3.0
63°	4.0	4.0	4.0	3.0	5.0	5.0	5.0	3.0	3.0	2.0	3.0
64°	3.0	3.0	3.0	3.0	4.0	5.0	5.0	2.0	3.0	2.0	3.0
65°	3.0	3.0	2.0	2.0	4.0	4.0	4.0	2.0	3.0	2.0	3.0
66°	2.0	2.0	2.0	2.0	4.0	4.0	4.0	2.0	3.0	2.0	3.0



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CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
72.5°	1.0	1.0	1.0	1.0	3.0	3.0	4.0	2.0	3.0	3.0	3.0
75°	1.0	1.0	1.0	1.0	3.0	3.0	4.0	2.0	3.0	3.0	3.0
77.5°	1.0	1.0	1.0	1.0	3.0	3.0	4.0	2.0	3.0	3.0	4.0
80°	1.0	1.0	1.0	1.0	3.0	3.0	4.0	2.0	3.0	3.0	4.0
82.5°	1.0	1.0	1.0	1.0	3.0	3.0	4.0	2.0	3.0	3.0	4.0
85°	1.0	1.0	1.0	1.0	3.0	3.0	4.0	2.0	3.0	3.0	4.0
87.5°	1.0	1.0	1.0	1.0	3.0	3.0	4.0	2.0	3.0	3.0	3.0
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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CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	94.0	94.0	94.0
2.5°	71.0	68.0	66.0
5°	61.0	58.0	57.0
7.5°	57.0	56.0	57.0
10°	63.0	67.0	72.0
12.5°	84.0	99.0	107.0
15°	139.0	181.0	199.0
17.5°	245.0	278.9	298.9
20°	216.0	197.0	208.0
22.5°	117.0	102.0	105.0
25°	65.0	56.0	57.0
26°	52.0	45.0	45.0
27°	42.0	36.0	36.0
28°	34.0	29.0	29.0
29°	27.0	23.0	23.0
30°	22.0	19.0	19.0
31°	18.0	15.0	15.0
32°	15.0	13.0	12.0
33°	13.0	11.0	10.0
34°	11.0	9.0	8.0
35°	9.0	7.0	7.0
36°	8.0	6.0	6.0
37°	7.0	5.0	5.0
38°	6.0	4.0	4.0
39°	5.0	4.0	3.0
40°	4.0	3.0	2.0
42.5°	3.0	2.0	1.0
45°	3.0	1.0	0.0
47.5°	2.0	1.0	0.0
50°	2.0	0.0	0.0
51°	2.0	0.0	0.0
52°	2.0	0.0	0.0
53°	1.0	0.0	0.0
54°	2.0	0.0	0.0
55°	1.0	0.0	0.0
57.5°	2.0	0.0	0.0
60°	2.0	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	1.0	0.0
65°	2.0	1.0	0.0
66°	2.0	1.0	0.0



TEST NUMBER: P170903

CATALOG NUMBER: LDA4A18835D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	2.0	1.0	0.0
75°	2.0	1.0	0.0
77.5°	2.0	1.0	0.0
80°	2.0	1.0	0.0
82.5°	2.0	1.0	0.0
85°	2.0	1.0	0.0
87.5°	2.0	1.0	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0
70°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0





67.5°	2.0	1.0	2.0	2.0	3.0	4.0	4.0	2.0	3.0	2.0	3.0
70°	1.0	1.0	1.0	1.0	3.0	3.0	4.0	2.0	3.0	2.0	3.0





67.5°	2.0	1.0	0.0
70°	2.0	1.0	0.0



(END OF REPORT)