

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: P170919

Luminaire Tested: **LDA4A13835D010TE LAR15SP 4LA1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P170919
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: LDA4A13835D010TE 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: 1300.3 lumens
Efficiency: N/A
Efficacy: 58.4 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

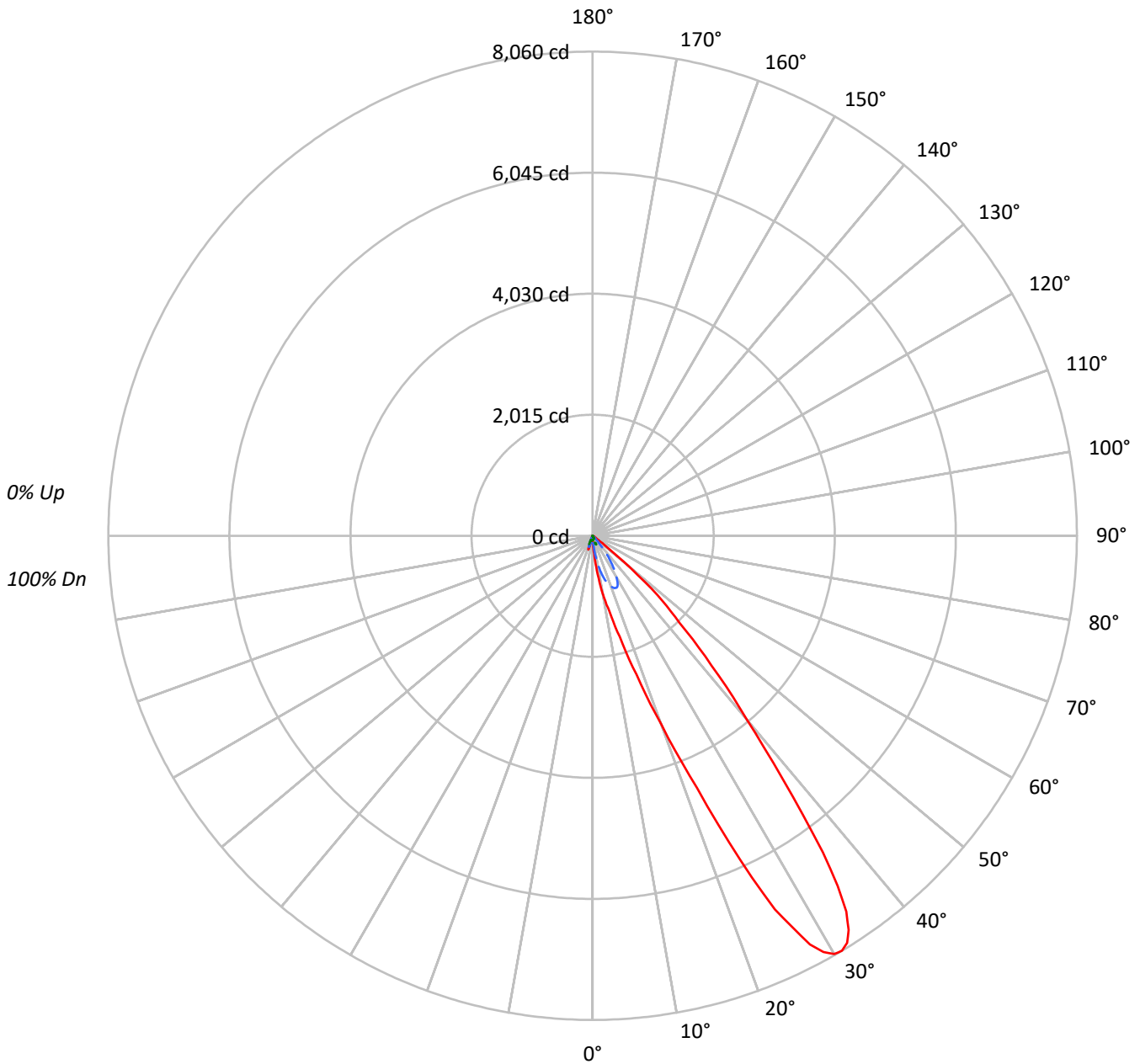
Input Watts (W): 22.27
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P170919

CATALOG NUMBER: LDA4A13835D010TE LAR15SP 4LA1 30° Tilt

Luminous Intensity Polar Plot





TEST NUMBER: P170919

CATALOG NUMBER: LDA4A13835D010TE LAR15SP 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			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°	9362	9362	9362
5°	41962	8791	5696
10°	124221	8091	7277
15°	221771	9590	20508
20°	439293	18849	22039
25°	854824	12303	6260
30°	1145044	4600	2179
35°	1071417	1942	843
40°	642052	902	258
45°	356288	558	0
50°	130697	461	0
55°	19956	344	0
60°	4391	395	0
65°	1401	467	0
70°	289	577	0
75°	0	1144	0
80°	0	1705	0
85°	0	3397	0



TEST NUMBER: P170919

CATALOG NUMBER: LDA4A13835D010TE LAR15SP 4LA1 30° Tilt

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	16.7	1.3
10°-20°	140.5	10.8
20°-30°	419.3	32.2
30°-40°	496.5	38.2
40°-50°	206.0	15.8
50°-60°	16.0	1.2
60°-70°	2.2	0.2
70°-80°	1.7	0.1
80°-90°	1.5	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°	576.4	44.3
0°-40°	1072.9	82.5
0°-60°	1294.9	99.6
0°-90°	1300.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1300.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	76	76	76	76	76	
5°	339	171	71	49	46	54
15°	1737	734	75	112	161	573
25°	6281	953	90	52	46	2869
35°	7115	531	13	7	6	4123
45°	2042	47	3	2	0	1665
55°	93	6	2	1	0	136
65°	5	2	2	2	0	6
75°	0	2	2	2	0	0
85°	0	2	2	2	0	0
90°	0	0	0	0	0	



TEST NUMBER: P170919

CATALOG NUMBER: LDA4A13835D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9
2.5°	131.5	125.1	128.3	122.7	125.9	120.2	116.2	120.2	120.2	117.0	112.2
5°	338.9	337.3	343.8	328.5	332.5	315.5	301.0	305.1	301.8	291.3	272.8
7.5°	645.6	639.2	646.4	624.6	625.4	597.2	575.4	580.2	565.7	548.0	515.7
10°	991.8	982.9	991.0	965.2	960.3	920.8	890.1	895.0	861.9	832.8	783.6
12.5°	1292.0	1291.2	1265.4	1270.2	1260.6	1200.0	1180.7	1182.3	1137.1	1104.8	1045.9
15°	1736.7	1753.6	1758.5	1725.4	1665.7	1555.9	1507.5	1488.9	1415.5	1361.4	1276.7
17.5°	2420.2	2443.6	2363.7	2383.1	2284.7	2112.8	2016.7	1959.4	1821.4	1719.7	1566.4
20°	3346.7	3326.5	3211.1	3196.6	3028.7	2807.6	2605.8	2497.7	2285.5	2137.0	1913.4
22.5°	4542.7	4527.3	4329.6	4241.7	3890.6	3579.1	3317.6	3046.5	2730.9	2532.4	2229.0
25°	6281.0	6210.8	5829.9	5579.7	4962.3	4432.9	3997.1	3575.9	3092.5	2877.0	2491.2
26°	6920.9	6904.0	6506.9	6177.7	5433.6	4776.7	4189.2	3767.1	3234.5	2982.7	2565.5
27°	7305.1	7439.9	7070.2	6697.4	5883.9	5097.1	4416.0	3921.3	3345.1	3057.0	2613.1
28°	7703.7	7790.9	7460.0	6992.0	6244.7	5352.1	4587.9	4025.4	3412.9	3093.3	2629.2
29°	7923.3	8007.2	7699.7	7260.7	6481.1	5517.5	4689.6	4071.4	3437.9	3092.5	2614.7
30°	8039.5	8117.7	7817.5	7391.4	6578.8	5569.2	4711.3	4052.8	3413.7	3055.4	2573.6
31°	8060.4	8125.8	7829.6	7387.4	6541.6	5505.4	4650.0	3976.2	3349.1	2986.8	2511.4
32°	7989.4	8040.3	7739.3	7268.0	6374.6	5344.0	4522.5	3857.5	3250.6	2901.2	2431.5
33°	7823.2	7914.4	7547.2	7026.7	6084.1	5105.2	4341.7	3702.6	3128.0	2789.8	2333.9
34°	7548.0	7606.1	7226.0	6649.0	5696.7	4814.6	4119.8	3522.6	2987.6	2658.3	2223.3
35°	7115.4	7167.1	6746.6	6138.9	5255.3	4487.0	3866.4	3324.1	2830.2	2510.6	2100.7
36°	6516.6	6565.9	6126.0	5572.4	4809.8	4145.6	3599.3	3107.8	2659.9	2352.4	1970.7
37°	5816.9	5859.7	5468.3	5016.4	4372.4	3800.2	3328.9	2888.3	2480.0	2191.0	1847.3
38°	5140.7	5179.4	4863.1	4495.1	3950.3	3462.9	3059.4	2660.7	2294.3	2028.8	1717.3
39°	4530.6	4564.5	4309.4	4006.0	3548.4	3139.3	2790.7	2434.8	2107.9	1866.6	1583.4
40°	3987.5	4016.5	3806.7	3557.3	3183.7	2836.7	2529.2	2216.1	1925.5	1709.3	1458.3
42.5°	2927.0	2933.5	2808.4	2661.5	2371.0	2171.7	1953.0	1727.0	1514.8	1366.3	1206.5
45°	2042.5	2122.4	2040.9	1943.3	1735.1	1610.0	1470.4	1334.0	1211.3	1068.5	910.3
47.5°	1468.8	1472.0	1423.6	1362.2	1197.6	1112.1	997.5	832.0	710.2	507.6	376.9
50°	681.1	643.2	645.6	603.6	538.3	427.7	357.5	255.0	203.4	145.3	117.0
51°	405.1	376.9	380.9	351.1	307.5	239.7	203.4	163.0	141.2	109.8	90.4
52°	236.5	226.8	226.0	212.2	180.8	166.2	146.9	122.7	107.3	84.7	70.2
53°	171.9	165.4	165.4	156.6	134.8	125.1	111.4	94.4	82.3	64.6	53.3
54°	128.3	123.5	123.5	117.8	108.9	93.6	83.9	70.2	61.3	50.0	39.5
55°	92.8	89.6	89.6	85.5	79.1	67.8	60.5	50.8	45.2	36.3	29.1
57.5°	38.7	37.1	37.1	35.5	33.9	29.1	27.4	23.4	20.2	17.8	14.5
60°	17.8	16.9	17.8	16.9	15.3	16.1	13.7	12.1	11.3	9.7	8.1
61°	13.7	12.9	12.9	12.9	11.3	11.3	10.5	9.7	8.9	7.3	6.5
62°	10.5	9.7	9.7	9.7	8.9	8.9	8.1	7.3	7.3	5.6	4.8
63°	8.1	7.3	7.3	7.3	6.5	6.5	6.5	5.6	5.6	4.8	4.0
64°	5.6	5.6	5.6	5.6	5.6	4.8	4.8	4.8	4.0	3.2	3.2
65°	4.8	4.0	4.8	4.0	4.0	4.0	4.0	4.0	3.2	2.4	2.4
66°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	2.4	1.6



TEST NUMBER: P170919

CATALOG NUMBER: LDA4A13835D010TE LAR15SP 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	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8
75°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8
85°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0



TEST NUMBER: P170919

CATALOG NUMBER: LDA4A13835D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9	75.9
2.5°	109.8	113.0	110.6	104.1	107.3	105.7	102.5	100.1	85.5	74.2	62.9
5°	259.1	261.5	247.8	223.5	215.5	202.6	184.0	171.1	96.8	71.0	55.7
7.5°	489.9	473.7	460.8	415.6	396.2	366.4	330.9	305.9	110.6	67.0	51.6
10°	741.6	715.8	689.2	623.0	588.3	542.3	491.5	462.4	125.1	64.6	51.6
12.5°	991.0	956.3	907.9	835.3	786.0	723.9	654.5	602.8	135.6	66.2	59.7
15°	1207.3	1165.3	1112.1	1029.7	972.5	895.0	804.6	733.6	140.4	75.1	83.1
17.5°	1442.9	1367.1	1279.1	1174.2	1111.3	1021.7	920.0	833.6	140.4	95.2	133.2
20°	1714.1	1575.3	1434.1	1287.2	1198.4	1104.8	995.9	903.0	146.1	143.6	183.2
22.5°	1966.7	1775.4	1576.1	1384.8	1261.4	1159.7	1049.1	942.6	169.5	158.2	121.9
25°	2162.8	1919.9	1685.0	1452.6	1313.0	1200.0	1081.4	953.1	154.9	90.4	66.2
26°	2213.6	1951.4	1706.8	1460.7	1315.4	1199.2	1078.2	941.8	129.9	71.8	53.3
27°	2240.3	1961.8	1708.4	1453.4	1305.7	1185.5	1060.4	918.4	104.1	58.1	43.6
28°	2240.3	1949.7	1691.5	1433.3	1280.7	1159.7	1029.7	881.3	84.7	47.6	34.7
29°	2217.7	1918.3	1657.6	1402.6	1246.8	1123.4	987.8	837.7	71.8	39.5	28.2
30°	2174.1	1872.3	1612.4	1363.0	1203.3	1082.2	941.8	792.5	62.1	32.3	22.6
31°	2112.8	1820.6	1556.7	1320.3	1162.9	1044.3	899.8	746.5	54.1	25.8	18.6
32°	2039.3	1756.1	1499.4	1275.9	1129.8	1008.8	856.2	698.1	46.8	21.8	16.1
33°	1954.6	1683.4	1439.7	1232.3	1097.5	968.4	808.6	645.6	40.4	17.8	13.7
34°	1861.0	1603.5	1378.4	1185.5	1058.0	917.6	752.9	589.9	34.7	15.3	11.3
35°	1759.3	1514.0	1315.4	1137.9	1013.6	861.1	693.2	531.0	29.9	12.9	9.7
36°	1649.5	1430.0	1254.1	1090.3	958.7	799.7	627.9	470.5	25.8	10.5	8.9
37°	1539.8	1350.9	1193.6	1039.4	895.0	730.3	559.3	407.5	22.6	8.9	7.3
38°	1435.7	1274.3	1133.9	980.5	820.7	653.7	488.2	344.6	19.4	8.1	6.5
39°	1338.0	1200.0	1072.5	910.3	744.1	579.4	419.6	279.2	16.9	7.3	5.6
40°	1250.1	1129.8	1005.5	832.0	665.0	503.6	350.2	208.2	14.5	5.6	4.8
42.5°	1064.4	936.9	773.1	580.2	449.5	292.1	163.0	77.5	10.5	4.0	4.0
45°	702.9	540.7	367.2	218.7	147.7	88.8	66.2	46.8	8.1	3.2	3.2
47.5°	234.8	149.3	108.9	78.3	67.0	53.3	42.8	29.1	5.6	2.4	2.4
50°	89.6	72.6	59.7	45.2	40.4	32.3	25.8	16.9	4.0	2.4	2.4
51°	70.2	57.3	46.8	35.5	32.3	25.8	21.0	14.5	3.2	2.4	2.4
52°	54.1	44.4	36.3	27.4	25.8	21.0	17.8	12.1	3.2	1.6	2.4
53°	41.2	33.9	27.4	21.0	20.2	16.9	14.5	9.7	2.4	1.6	2.4
54°	30.7	25.8	21.8	16.9	16.9	14.5	12.1	8.1	2.4	1.6	2.4
55°	23.4	19.4	16.9	12.9	13.7	12.1	10.5	6.5	2.4	1.6	2.4
57.5°	12.1	11.3	9.7	8.1	8.9	8.1	7.3	4.0	2.4	1.6	2.4
60°	7.3	6.5	5.6	4.8	5.6	5.6	5.6	2.4	2.4	1.6	2.4
61°	5.6	4.8	4.0	4.0	4.8	4.8	4.8	2.4	2.4	1.6	2.4
62°	4.0	4.0	3.2	3.2	4.8	4.0	4.0	2.4	2.4	1.6	2.4
63°	3.2	3.2	3.2	2.4	4.0	4.0	4.0	2.4	2.4	1.6	2.4
64°	2.4	2.4	2.4	2.4	3.2	4.0	4.0	1.6	2.4	1.6	2.4
65°	2.4	2.4	1.6	1.6	3.2	3.2	3.2	1.6	2.4	1.6	2.4
66°	1.6	1.6	1.6	1.6	3.2	3.2	3.2	1.6	2.4	1.6	2.4



TEST NUMBER: P170919

CATALOG NUMBER: LDA4A13835D010TE LAR15SP 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°	0.8	0.8	0.8	0.8	2.4	2.4	3.2	1.6	2.4	2.4	2.4
75°	0.8	0.8	0.8	0.8	2.4	2.4	3.2	1.6	2.4	2.4	2.4
77.5°	0.8	0.8	0.8	0.8	2.4	2.4	3.2	1.6	2.4	2.4	3.2
80°	0.8	0.8	0.8	0.8	2.4	2.4	3.2	1.6	2.4	2.4	3.2
82.5°	0.8	0.8	0.8	0.8	2.4	2.4	3.2	1.6	2.4	2.4	3.2
85°	0.8	0.8	0.8	0.8	2.4	2.4	3.2	1.6	2.4	2.4	3.2
87.5°	0.8	0.8	0.8	0.8	2.4	2.4	3.2	1.6	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: P170919

CATALOG NUMBER: LDA4A13835D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	75.9	75.9	75.9
2.5°	57.3	54.9	53.3
5°	49.2	46.8	46.0
7.5°	46.0	45.2	46.0
10°	50.8	54.1	58.1
12.5°	67.8	79.9	86.4
15°	112.2	146.1	160.6
17.5°	197.7	225.2	241.3
20°	174.3	159.0	167.9
22.5°	94.4	82.3	84.7
25°	52.5	45.2	46.0
26°	42.0	36.3	36.3
27°	33.9	29.1	29.1
28°	27.4	23.4	23.4
29°	21.8	18.6	18.6
30°	17.8	15.3	15.3
31°	14.5	12.1	12.1
32°	12.1	10.5	9.7
33°	10.5	8.9	8.1
34°	8.9	7.3	6.5
35°	7.3	5.6	5.6
36°	6.5	4.8	4.8
37°	5.6	4.0	4.0
38°	4.8	3.2	3.2
39°	4.0	3.2	2.4
40°	3.2	2.4	1.6
42.5°	2.4	1.6	0.8
45°	2.4	0.8	0.0
47.5°	1.6	0.8	0.0
50°	1.6	0.0	0.0
51°	1.6	0.0	0.0
52°	1.6	0.0	0.0
53°	0.8	0.0	0.0
54°	1.6	0.0	0.0
55°	0.8	0.0	0.0
57.5°	1.6	0.0	0.0
60°	1.6	0.0	0.0
61°	1.6	0.0	0.0
62°	1.6	0.0	0.0
63°	1.6	0.0	0.0
64°	1.6	0.8	0.0
65°	1.6	0.8	0.0
66°	1.6	0.8	0.0



TEST NUMBER: P170919

CATALOG NUMBER: LDA4A13835D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	1.6	0.8	0.0
75°	1.6	0.8	0.0
77.5°	1.6	0.8	0.0
80°	1.6	0.8	0.0
82.5°	1.6	0.8	0.0
85°	1.6	0.8	0.0
87.5°	1.6	0.8	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.6	1.6
70°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6	0.8	0.8





67.5°	1.6	0.8	1.6	1.6	2.4	3.2	3.2	1.6	2.4	1.6	2.4
70°	0.8	0.8	0.8	0.8	2.4	2.4	3.2	1.6	2.4	1.6	2.4





67.5°	1.6	0.8	0.0
70°	1.6	0.8	0.0



(END OF REPORT)