

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: P170927

Luminaire Tested: **LDA4A28835D010TE LAR15SP 4LA1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P170927
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: LDA4A28835D010TE 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: 2522.6 lumens
Efficiency: N/A
Efficacy: 56.7 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

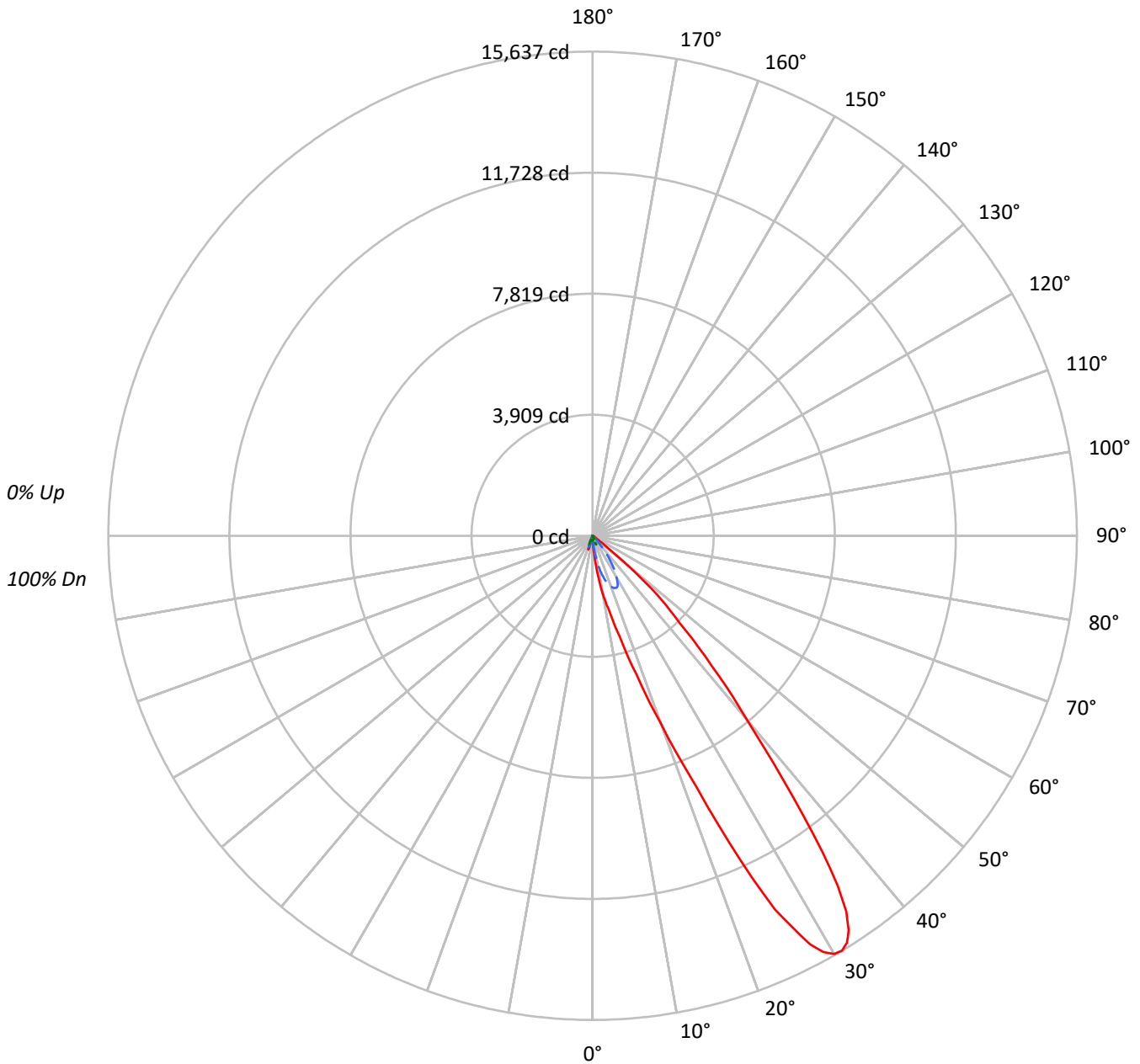
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20										
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	98	96	96	94	93	91								
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	86	84	82								
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74								
4	92	83	77	71	90	82	76	71	80	74	70	78	73	69	76	72	68	67								
5	86	76	69	64	84	75	68	63	73	67	63	71	66	62	70	65	62	60								
6	80	69	62	57	79	69	62	57	67	61	56	65	60	56	64	59	56	54								
7	75	64	56	51	73	63	56	51	62	55	51	60	55	50	59	54	50	49								
8	70	58	51	46	69	58	51	46	57	50	46	55	50	46	54	49	45	44								
9	65	54	47	42	64	53	46	42	52	46	41	51	45	41	50	45	41	40								
10	61	49	42	38	60	49	42	38	48	42	38	47	41	37	46	41	37	36								

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	18156	18156	18156
5°	81410	17062	11044
10°	240978	15681	14115
15°	430210	18593	39778
20°	852190	36583	42739
25°	1658286	23858	12140
30°	2221281	8916	4230
35°	2078462	3764	1656
40°	1245509	1771	499
45°	691189	1099	0
50°	253547	902	0
55°	38708	667	0
60°	8486	765	0
65°	2743	905	0
70°	577	1118	0
75°	0	2240	0
80°	0	3339	0
85°	0	6652	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	32.3	1.3
10°-20°	272.5	10.8
20°-30°	813.3	32.2
30°-40°	963.3	38.2
40°-50°	399.6	15.8
50°-60°	31.1	1.2
60°-70°	4.3	0.2
70°-80°	3.2	0.1
80°-90°	3.0	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°	1118.1	44.3
0°-40°	2081.4	82.5
0°-60°	2512.1	99.6
0°-90°	2522.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2522.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	147	147	147	147	147	
5°	658	332	138	96	89	104
15°	3369	1423	146	218	312	1112
25°	12185	1849	175	102	89	5565
35°	13803	1030	25	14	11	7999
45°	3962	91	6	5	0	3230
55°	180	12	3	2	0	264
65°	9	3	3	3	0	12
75°	0	3	5	3	0	0
85°	0	3	5	3	0	0
90°	0	0	0	0	0	



TEST NUMBER: P170927

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CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2
2.5°	255.2	242.7	248.9	238.0	244.2	233.3	225.4	233.3	233.3	227.0	217.6
5°	657.5	654.4	666.9	637.2	645.0	612.1	583.9	591.8	585.5	565.2	529.2
7.5°	1252.4	1239.9	1254.0	1211.7	1213.3	1158.5	1116.2	1125.6	1097.4	1063.0	1000.4
10°	1924.0	1906.8	1922.5	1872.4	1863.0	1786.3	1726.8	1736.2	1672.0	1615.6	1520.1
12.5°	2506.4	2504.9	2454.8	2464.2	2445.4	2328.0	2290.4	2293.5	2205.8	2143.2	2028.9
15°	3369.0	3401.9	3411.3	3347.1	3231.3	3018.4	2924.4	2888.4	2745.9	2641.1	2476.7
17.5°	4695.0	4740.4	4585.5	4623.0	4432.0	4098.6	3912.3	3801.1	3533.4	3336.2	3038.7
20°	6492.3	6453.1	6229.3	6201.1	5875.5	5446.5	5055.1	4845.3	4433.6	4145.5	3711.9
22.5°	8812.4	8782.7	8399.1	8228.5	7547.4	6943.2	6435.9	5909.9	5297.8	4912.7	4324.0
25°	12184.6	12048.4	11309.4	10824.1	9626.5	8599.5	7754.1	6936.9	5999.1	5581.1	4832.8
26°	13426.0	13393.2	12622.9	11984.2	10540.8	9266.4	8126.7	7307.9	6274.7	5786.2	4976.8
27°	14171.2	14432.7	13715.7	12992.4	11414.3	9887.9	8566.6	7606.9	6489.1	5930.2	5069.2
28°	14944.6	15113.7	14471.8	13563.8	12114.1	10382.6	8900.1	7808.9	6620.7	6000.7	5100.5
29°	15370.4	15533.2	14936.8	14085.1	12572.8	10703.6	9097.3	7898.1	6669.2	5999.1	5072.3
30°	15595.9	15747.7	15165.3	14338.7	12762.2	10803.8	9139.6	7862.1	6622.2	5927.1	4992.5
31°	15636.6	15763.4	15188.8	14330.9	12690.2	10680.1	9020.6	7713.4	6497.0	5794.0	4871.9
32°	15498.8	15597.4	15013.5	14099.2	12366.2	10367.0	8773.3	7483.3	6306.0	5628.1	4717.0
33°	15176.3	15353.2	14640.9	13631.1	11802.6	9903.6	8422.6	7182.7	6068.0	5412.1	4527.5
34°	14642.5	14755.2	14017.8	12898.4	11051.1	9340.0	7992.1	6833.6	5795.6	5156.9	4313.1
35°	13803.3	13903.5	13087.9	11909.0	10194.8	8704.4	7500.5	6448.4	5490.3	4870.4	4075.1
36°	12641.7	12737.2	11884.0	10810.0	9330.6	8042.2	6982.3	6028.9	5160.0	4563.5	3823.0
37°	11284.4	11367.4	10608.1	9731.4	8482.1	7372.1	6457.8	5603.1	4810.9	4250.4	3583.5
38°	9972.5	10047.6	9433.9	8720.0	7663.3	6717.7	5934.9	5161.6	4450.8	3935.8	3331.5
39°	8788.9	8854.7	8360.0	7771.3	6883.7	6089.9	5413.6	4723.2	4089.2	3621.1	3071.6
40°	7735.3	7791.7	7384.6	6900.9	6176.0	5502.9	4906.4	4299.0	3735.4	3315.8	2828.9
42.5°	5678.2	5690.7	5448.1	5163.1	4599.5	4212.9	3788.6	3350.2	2938.5	2650.5	2340.5
45°	3962.4	4117.4	3959.2	3769.8	3365.9	3123.2	2852.4	2587.8	2349.9	2072.8	1765.9
47.5°	2849.3	2855.5	2761.6	2642.6	2323.3	2157.3	1935.0	1614.1	1377.7	984.7	731.1
50°	1321.3	1247.7	1252.4	1171.0	1044.2	829.7	693.5	494.7	394.5	281.8	227.0
51°	785.9	731.1	738.9	681.0	596.5	465.0	394.5	316.2	274.0	212.9	175.3
52°	458.7	439.9	438.3	411.7	350.7	322.5	284.9	238.0	208.2	164.4	136.2
53°	333.5	320.9	320.9	303.7	261.4	242.7	216.0	183.2	159.7	125.2	103.3
54°	248.9	239.5	239.5	228.6	211.3	181.6	162.8	136.2	119.0	97.1	76.7
55°	180.0	173.8	173.8	165.9	153.4	131.5	117.4	98.6	87.7	70.4	56.4
57.5°	75.1	72.0	72.0	68.9	65.8	56.4	53.2	45.4	39.1	34.4	28.2
60°	34.4	32.9	34.4	32.9	29.7	31.3	26.6	23.5	21.9	18.8	15.7
61°	26.6	25.0	25.0	25.0	21.9	21.9	20.4	18.8	17.2	14.1	12.5
62°	20.4	18.8	18.8	18.8	17.2	17.2	15.7	14.1	14.1	11.0	9.4
63°	15.7	14.1	14.1	14.1	12.5	12.5	12.5	11.0	11.0	9.4	7.8
64°	11.0	11.0	11.0	11.0	11.0	9.4	9.4	9.4	7.8	6.3	6.3
65°	9.4	7.8	9.4	7.8	7.8	7.8	7.8	7.8	6.3	4.7	4.7
66°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	4.7	3.1



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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	1.6	1.6	1.6	1.6	1.6	1.6	1.6
75°	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6
80°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6
85°	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	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



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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°	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2	147.2
2.5°	212.9	219.2	214.5	202.0	208.2	205.1	198.8	194.1	165.9	144.0	122.1
5°	502.5	507.2	480.6	433.7	418.0	392.9	356.9	331.9	187.9	137.8	108.0
7.5°	950.3	919.0	893.9	806.3	768.7	710.8	641.9	593.3	214.5	129.9	100.2
10°	1438.7	1388.6	1337.0	1208.6	1141.3	1052.0	953.4	897.1	242.7	125.2	100.2
12.5°	1922.5	1855.2	1761.2	1620.3	1524.8	1404.3	1269.6	1169.5	263.0	128.4	115.8
15°	2342.0	2260.6	2157.3	1997.6	1886.5	1736.2	1560.8	1423.1	272.4	145.6	161.3
17.5°	2799.2	2652.0	2481.4	2277.9	2155.7	1982.0	1784.7	1617.2	272.4	184.7	258.3
20°	3325.2	3055.9	2782.0	2497.0	2324.8	2143.2	1931.9	1751.8	283.4	278.7	355.4
22.5°	3815.2	3444.2	3057.5	2686.5	2446.9	2249.7	2035.2	1828.5	328.8	306.8	236.4
25°	4195.6	3724.4	3268.8	2818.0	2547.1	2328.0	2097.8	1848.9	300.6	175.3	128.4
26°	4294.3	3785.5	3311.1	2833.6	2551.8	2326.4	2091.6	1827.0	252.1	139.3	103.3
27°	4345.9	3805.8	3314.2	2819.5	2533.0	2299.8	2057.1	1781.6	202.0	112.7	84.5
28°	4345.9	3782.3	3281.4	2780.4	2484.5	2249.7	1997.6	1709.6	164.4	92.4	67.3
29°	4302.1	3721.3	3215.6	2720.9	2418.8	2179.2	1916.2	1625.0	139.3	76.7	54.8
30°	4217.6	3632.0	3127.9	2644.2	2334.2	2099.4	1827.0	1537.4	120.5	62.6	43.8
31°	4098.6	3531.8	3019.9	2561.2	2255.9	2025.8	1745.6	1448.1	104.9	50.1	36.0
32°	3956.1	3406.6	2908.8	2475.1	2191.7	1956.9	1661.0	1354.2	90.8	42.3	31.3
33°	3791.7	3265.7	2792.9	2390.6	2129.1	1878.6	1568.7	1252.4	78.3	34.4	26.6
34°	3610.1	3110.7	2673.9	2299.8	2052.4	1780.0	1460.6	1144.4	67.3	29.7	21.9
35°	3412.9	2936.9	2551.8	2207.4	1966.3	1670.4	1344.8	1030.1	57.9	25.0	18.8
36°	3200.0	2774.1	2432.8	2115.0	1859.9	1551.4	1218.0	912.7	50.1	20.4	17.2
37°	2987.0	2620.7	2315.4	2016.4	1736.2	1416.8	1084.9	790.6	43.8	17.2	14.1
38°	2785.1	2472.0	2199.6	1902.1	1592.1	1268.1	947.1	668.5	37.6	15.7	12.5
39°	2595.7	2328.0	2080.6	1765.9	1443.4	1124.1	814.1	541.7	32.9	14.1	11.0
40°	2425.0	2191.7	1950.7	1614.1	1290.0	976.9	679.4	403.9	28.2	11.0	9.4
42.5°	2064.9	1817.6	1499.8	1125.6	872.0	566.7	316.2	150.3	20.4	7.8	7.8
45°	1363.6	1048.9	712.3	424.3	286.5	172.2	128.4	90.8	15.7	6.3	6.3
47.5°	455.6	289.6	211.3	151.9	129.9	103.3	83.0	56.4	11.0	4.7	4.7
50°	173.8	140.9	115.8	87.7	78.3	62.6	50.1	32.9	7.8	4.7	4.7
51°	136.2	111.2	90.8	68.9	62.6	50.1	40.7	28.2	6.3	4.7	4.7
52°	104.9	86.1	70.4	53.2	50.1	40.7	34.4	23.5	6.3	3.1	4.7
53°	79.8	65.8	53.2	40.7	39.1	32.9	28.2	18.8	4.7	3.1	4.7
54°	59.5	50.1	42.3	32.9	32.9	28.2	23.5	15.7	4.7	3.1	4.7
55°	45.4	37.6	32.9	25.0	26.6	23.5	20.4	12.5	4.7	3.1	4.7
57.5°	23.5	21.9	18.8	15.7	17.2	15.7	14.1	7.8	4.7	3.1	4.7
60°	14.1	12.5	11.0	9.4	11.0	11.0	11.0	4.7	4.7	3.1	4.7
61°	11.0	9.4	7.8	7.8	9.4	9.4	9.4	4.7	4.7	3.1	4.7
62°	7.8	7.8	6.3	6.3	9.4	7.8	7.8	4.7	4.7	3.1	4.7
63°	6.3	6.3	6.3	4.7	7.8	7.8	7.8	4.7	4.7	3.1	4.7
64°	4.7	4.7	4.7	4.7	6.3	7.8	7.8	3.1	4.7	3.1	4.7
65°	4.7	4.7	3.1	3.1	6.3	6.3	6.3	3.1	4.7	3.1	4.7
66°	3.1	3.1	3.1	3.1	6.3	6.3	6.3	3.1	4.7	3.1	4.7



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CATALOG NUMBER: LDA4A28835D010TE 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°	1.6	1.6	1.6	1.6	4.7	4.7	6.3	3.1	4.7	4.7	4.7
75°	1.6	1.6	1.6	1.6	4.7	4.7	6.3	3.1	4.7	4.7	4.7
77.5°	1.6	1.6	1.6	1.6	4.7	4.7	6.3	3.1	4.7	4.7	6.3
80°	1.6	1.6	1.6	1.6	4.7	4.7	6.3	3.1	4.7	4.7	6.3
82.5°	1.6	1.6	1.6	1.6	4.7	4.7	6.3	3.1	4.7	4.7	6.3
85°	1.6	1.6	1.6	1.6	4.7	4.7	6.3	3.1	4.7	4.7	6.3
87.5°	1.6	1.6	1.6	1.6	4.7	4.7	6.3	3.1	4.7	4.7	4.7
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: P170927

CATALOG NUMBER: LDA4A28835D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	147.2	147.2	147.2
2.5°	111.2	106.5	103.3
5°	95.5	90.8	89.2
7.5°	89.2	87.7	89.2
10°	98.6	104.9	112.7
12.5°	131.5	155.0	167.5
15°	217.6	283.4	311.5
17.5°	383.6	436.8	468.1
20°	338.2	308.4	325.6
22.5°	183.2	159.7	164.4
25°	101.8	87.7	89.2
26°	81.4	70.4	70.4
27°	65.8	56.4	56.4
28°	53.2	45.4	45.4
29°	42.3	36.0	36.0
30°	34.4	29.7	29.7
31°	28.2	23.5	23.5
32°	23.5	20.4	18.8
33°	20.4	17.2	15.7
34°	17.2	14.1	12.5
35°	14.1	11.0	11.0
36°	12.5	9.4	9.4
37°	11.0	7.8	7.8
38°	9.4	6.3	6.3
39°	7.8	6.3	4.7
40°	6.3	4.7	3.1
42.5°	4.7	3.1	1.6
45°	4.7	1.6	0.0
47.5°	3.1	1.6	0.0
50°	3.1	0.0	0.0
51°	3.1	0.0	0.0
52°	3.1	0.0	0.0
53°	1.6	0.0	0.0
54°	3.1	0.0	0.0
55°	1.6	0.0	0.0
57.5°	3.1	0.0	0.0
60°	3.1	0.0	0.0
61°	3.1	0.0	0.0
62°	3.1	0.0	0.0
63°	3.1	0.0	0.0
64°	3.1	1.6	0.0
65°	3.1	1.6	0.0
66°	3.1	1.6	0.0



TEST NUMBER: P170927

CATALOG NUMBER: LDA4A28835D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	3.1	1.6	0.0
75°	3.1	1.6	0.0
77.5°	3.1	1.6	0.0
80°	3.1	1.6	0.0
82.5°	3.1	1.6	0.0
85°	3.1	1.6	0.0
87.5°	3.1	1.6	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	3.1	3.1
70°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	3.1	3.1	1.6	1.6





67.5°	3.1	1.6	3.1	3.1	4.7	6.3	6.3	3.1	4.7	3.1	4.7
70°	1.6	1.6	1.6	1.6	4.7	4.7	6.3	3.1	4.7	3.1	4.7





67.5°	3.1	1.6	0.0
70°	3.1	1.6	0.0



(END OF REPORT)