

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: P170701

Luminaire Tested: **LDA4A28827D010TE LAR25NF 4LA1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P170701
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: LDA4A28827D010TE 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 / 2700K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2407.8 lumens
Efficiency: N/A
Efficacy: 54.1 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

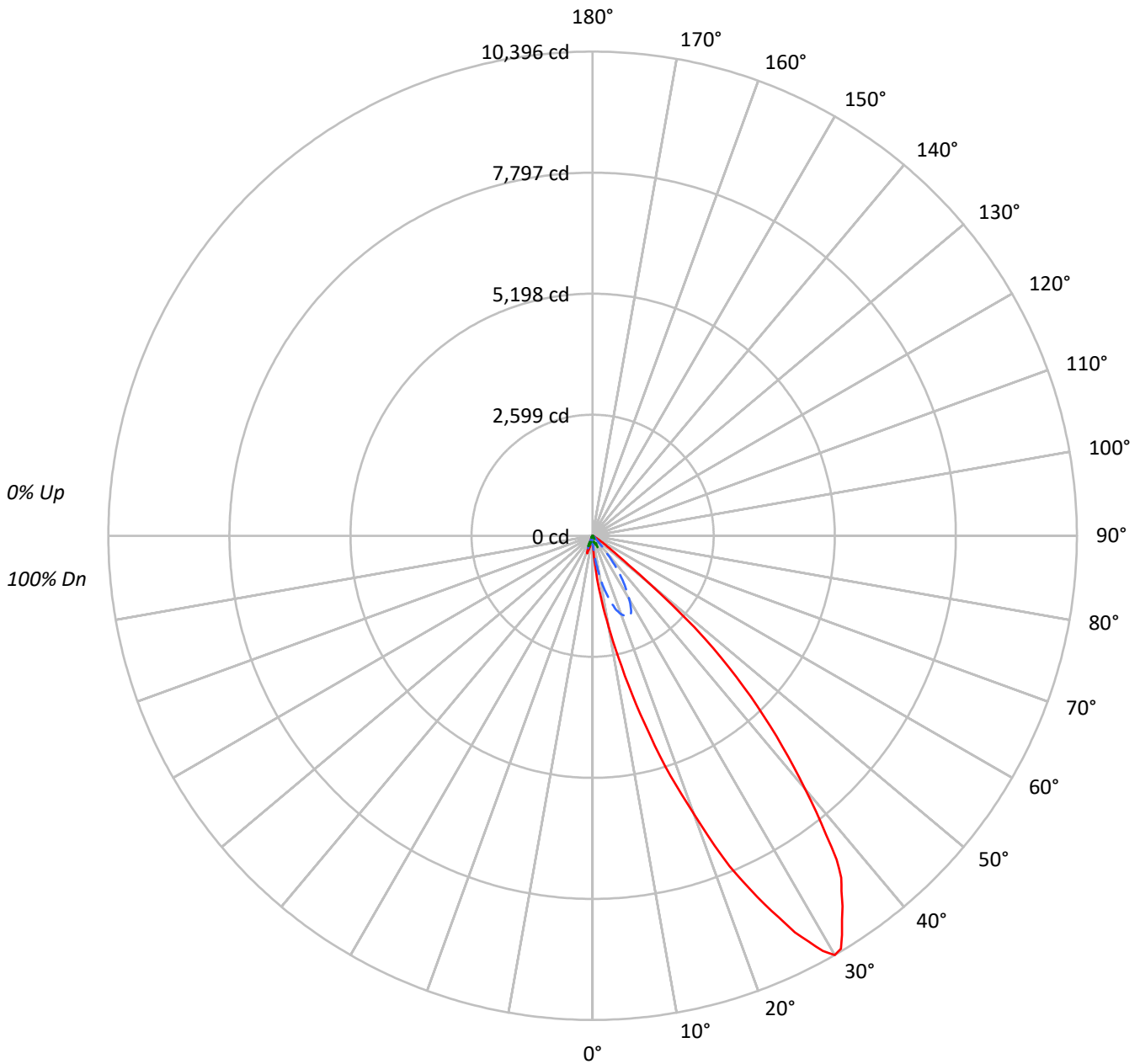
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P170701

CATALOG NUMBER: LDA4A28827D010TE LAR25NF 4LA1 30° Tilt

Luminous Intensity Polar Plot





TEST NUMBER: P170701

CATALOG NUMBER: LDA4A28827D010TE 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	38	48	42	37	47	41	37	46	41	37	36								

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	19686	19686	19686
5°	85520	18573	11243
10°	246589	16721	12237
15°	505271	18452	35308
20°	833604	34312	35756
25°	1187499	21912	11990
30°	1480617	9600	4700
35°	1402928	4352	2078
40°	1142636	2222	660
45°	800370	1204	0
50°	299908	787	0
55°	63912	882	0
60°	12211	691	0
65°	3619	1197	0
70°	1010	1479	0
75°	0	1954	0
80°	0	2912	0
85°	0	5802	0



TEST NUMBER: P170701

CATALOG NUMBER: LDA4A28827D010TE LAR25NF 4LA1 30° Tilt

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	33.5	1.4
10°-20°	288.3	12.0
20°-30°	736.6	30.6
30°-40°	853.0	35.4
40°-50°	440.1	18.3
50°-60°	45.4	1.9
60°-70°	4.9	0.2
70°-80°	3.1	0.1
80°-90°	2.8	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°	1058.4	44.0
0°-40°	1911.4	79.4
0°-60°	2397.0	99.6
0°-90°	2407.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2407.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	160	160	160	160	160	
5°	691	359	150	99	91	108
15°	3957	1449	144	193	276	1211
25°	8725	1892	161	100	88	4054
35°	9317	1035	29	16	14	5705
45°	4588	121	7	4	0	3436
55°	297	18	4	3	0	372
65°	12	4	4	3	0	16
75°	0	3	4	4	0	0
85°	0	3	4	4	0	0
90°	0	0	0	0	0	



TEST NUMBER: P170701

CATALOG NUMBER: LDA4A28827D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	159.6	159.6	159.6	159.6	159.6	159.6	159.6	159.6	159.6	159.6	159.6
2.5°	275.2	265.5	258.7	261.4	276.5	260.0	261.4	255.9	253.1	250.4	243.5
5°	690.7	663.1	645.3	646.6	606.7	637.0	634.2	610.9	595.7	566.8	550.3
7.5°	1296.0	1236.9	1216.2	1209.3	1213.5	1184.6	1172.2	1141.9	1102.0	1049.7	1019.5
10°	1968.8	1933.0	1920.6	1898.6	1897.2	1846.3	1816.1	1777.5	1697.8	1624.8	1571.2
12.5°	2868.6	2758.5	2739.2	2698.0	2687.0	2600.3	2537.0	2480.6	2347.1	2250.8	2165.5
15°	3956.8	3867.4	3888.0	3761.5	3727.1	3585.4	3467.0	3346.0	3130.0	2982.8	2831.4
17.5°	5192.3	5078.1	5091.9	4933.7	4648.9	4675.0	4503.0	4336.6	4032.5	3835.8	3601.9
20°	6350.7	6269.6	6275.1	6064.6	5968.3	5706.9	5477.1	5279.0	4874.5	4624.1	4314.5
22.5°	7683.9	7473.4	7433.5	7147.3	6978.1	6627.3	6306.7	6043.9	5554.2	5272.1	4892.4
25°	8725.4	8580.9	8470.9	8132.4	7897.2	7440.4	7068.9	6679.6	6090.7	5778.4	5327.1
26°	9116.1	8979.9	8838.2	8473.6	8209.5	7726.6	7322.1	6903.8	6273.7	5939.4	5448.2
27°	9557.8	9334.9	9164.3	8755.7	8469.5	7961.8	7481.7	7086.8	6412.7	6042.6	5525.3
28°	9870.1	9647.2	9421.6	8977.2	8667.6	8136.5	7637.1	7206.5	6493.8	6092.1	5556.9
29°	10190.6	9954.0	9625.2	9140.9	8803.8	8245.2	7726.6	7265.7	6517.2	6089.3	5540.4
30°	10395.6	10157.6	9732.5	9233.1	8876.7	8289.3	7751.3	7254.7	6480.1	6034.3	5479.9
31°	10347.5	10128.7	9706.3	9242.7	8869.9	8263.1	7705.9	7176.2	6386.5	5936.6	5369.8
32°	10106.7	9921.0	9600.4	9178.0	8794.2	8173.7	7600.0	7052.4	6251.7	5822.4	5236.3
33°	9827.4	9673.3	9451.8	9047.3	8662.1	8038.9	7454.1	6899.7	6096.2	5667.0	5075.4
34°	9593.5	9454.6	9249.6	8871.2	8481.9	7858.6	7269.8	6707.1	5918.7	5484.0	4885.5
35°	9317.0	9190.4	9000.6	8633.2	8231.5	7616.5	7038.7	6484.2	5709.6	5266.6	4665.4
36°	9076.2	8876.7	8684.1	8326.4	7926.0	7323.4	6766.2	6222.8	5473.0	5017.6	4417.7
37°	8703.4	8503.9	8297.5	7959.1	7564.2	6987.7	6463.6	5943.5	5203.3	4830.5	4153.6
38°	8146.2	8054.0	7847.6	7525.7	7158.3	6617.7	6132.0	5625.7	4899.3	4468.6	3872.9
39°	7626.1	7550.5	7349.6	7055.2	6715.3	6220.0	5764.6	5268.0	4556.7	4149.4	3577.1
40°	7096.4	7020.8	6832.3	6566.7	6261.3	5805.9	5373.9	4886.9	4197.6	3820.6	3279.9
42.5°	5841.7	5763.3	5723.4	5452.3	5129.0	4738.3	4337.9	3897.7	3311.6	3002.0	2578.3
45°	4588.3	4516.8	4366.8	4255.4	3966.5	3641.8	3315.7	2956.6	2524.6	2219.2	1823.0
47.5°	3279.9	3245.5	3251.0	3044.7	2769.5	2513.6	2243.9	1919.3	1536.8	1152.9	846.1
50°	1562.9	1572.6	1611.1	1466.6	1260.2	1110.3	950.7	745.7	544.8	427.9	331.6
51°	1012.6	1023.6	1056.6	953.4	803.5	701.7	599.9	484.3	386.6	328.8	262.8
52°	685.2	685.2	692.0	631.5	557.2	499.4	440.3	372.8	301.3	258.7	207.7
53°	514.6	513.2	515.9	476.0	425.1	382.5	341.2	291.7	238.0	202.2	161.0
54°	393.5	392.1	394.9	364.6	328.8	297.2	265.5	228.4	184.4	151.3	121.1
55°	297.2	297.2	301.3	277.9	250.4	225.6	202.2	170.6	136.2	110.1	88.1
57.5°	119.7	119.7	123.8	115.6	103.2	93.6	85.3	72.9	60.5	50.9	41.3
60°	49.5	50.9	52.3	48.2	45.4	42.7	39.9	35.8	31.6	26.1	22.0
61°	37.1	37.1	38.5	35.8	34.4	31.6	30.3	27.5	24.8	20.6	17.9
62°	27.5	27.5	28.9	27.5	26.1	24.8	23.4	22.0	19.3	16.5	13.8
63°	20.6	20.6	22.0	20.6	20.6	19.3	17.9	16.5	15.1	12.4	11.0
64°	16.5	16.5	16.5	15.1	15.1	15.1	13.8	13.8	11.0	9.6	8.3
65°	12.4	12.4	12.4	12.4	11.0	11.0	11.0	9.6	9.6	6.9	6.9
66°	9.6	9.6	9.6	8.3	8.3	8.3	8.3	8.3	6.9	5.5	4.1



TEST NUMBER: P170701

CATALOG NUMBER: LDA4A28827D010TE 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	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
75°	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4	1.4
77.5°	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4	1.4
80°	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4
82.5°	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4
85°	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4
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: P170701

CATALOG NUMBER: LDA4A28827D010TE 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°	159.6	159.6	159.6	159.6	159.6	159.6	159.6	159.6	159.6	159.6	159.6
2.5°	246.3	244.9	231.1	231.1	236.6	228.4	224.3	214.6	184.4	156.8	132.1
5°	544.8	529.7	482.9	469.2	467.8	429.3	407.2	359.1	210.5	150.0	114.2
7.5°	1005.7	960.3	880.5	837.9	785.6	755.3	701.7	619.1	239.4	140.3	103.2
10°	1487.3	1436.3	1318.0	1242.4	1202.5	1104.8	1015.3	902.5	268.3	133.5	101.8
12.5°	2039.0	1924.8	1811.9	1677.1	1557.4	1470.7	1322.2	1190.1	287.5	132.1	111.4
15°	2636.1	2493.0	2300.4	2118.7	1949.5	1825.7	1626.2	1448.7	294.4	144.5	145.8
17.5°	3304.7	3036.4	2758.5	2510.9	2278.3	2111.9	1864.2	1655.1	290.3	177.5	232.5
20°	3930.7	3574.4	3197.4	2853.4	2524.6	2308.6	2022.4	1795.4	291.7	261.4	313.7
22.5°	4427.4	3994.0	3534.5	3114.8	2698.0	2439.3	2127.0	1869.7	327.4	279.3	213.3
25°	4793.3	4282.9	3756.0	3273.1	2834.2	2543.9	2201.3	1891.7	305.4	161.0	121.1
26°	4891.0	4353.1	3797.2	3296.4	2850.7	2543.9	2190.3	1868.4	264.2	128.0	100.4
27°	4946.0	4384.7	3804.1	3285.4	2830.0	2515.0	2150.4	1821.6	216.0	107.3	85.3
28°	4952.9	4371.0	3769.7	3240.0	2772.3	2453.1	2078.9	1750.0	178.9	90.8	70.2
29°	4915.8	4320.0	3703.7	3164.4	2684.2	2362.3	1981.2	1662.0	152.7	78.4	59.2
30°	4837.4	4230.6	3603.2	3062.6	2570.0	2252.2	1867.0	1564.3	133.5	67.4	49.5
31°	4724.5	4108.2	3494.6	2941.5	2450.3	2142.1	1759.7	1465.2	118.3	56.4	41.3
32°	4578.7	3963.7	3354.2	2810.8	2343.0	2037.6	1656.5	1364.8	105.9	48.2	34.4
33°	4416.4	3800.0	3201.5	2674.6	2239.8	1930.3	1547.8	1258.9	94.9	39.9	28.9
34°	4229.2	3619.8	3039.2	2538.4	2129.8	1811.9	1430.8	1150.2	82.5	33.0	24.8
35°	4016.0	3418.9	2864.4	2414.5	2007.3	1684.0	1308.4	1034.6	72.9	28.9	20.6
36°	3784.9	3209.8	2688.3	2272.8	1875.2	1550.5	1179.1	917.7	63.3	24.8	17.9
37°	3542.7	2992.4	2512.2	2111.9	1729.4	1408.8	1045.6	791.1	55.0	20.6	15.1
38°	3286.8	2773.6	2341.6	1959.2	1575.3	1256.1	909.4	652.1	48.2	17.9	13.8
39°	3025.4	2557.6	2172.4	1791.3	1417.1	1106.2	778.7	506.3	42.7	15.1	12.4
40°	2769.5	2354.0	1993.6	1608.3	1258.9	958.9	652.1	372.8	37.1	13.8	9.6
42.5°	2193.0	1807.8	1430.8	1073.1	877.8	608.1	361.8	195.4	26.1	9.6	6.9
45°	1435.0	1069.0	771.8	522.8	454.0	257.3	167.8	121.1	19.3	6.9	5.5
47.5°	594.4	433.4	301.3	217.4	176.1	137.6	107.3	78.4	13.8	5.5	5.5
50°	261.4	206.4	163.7	128.0	111.4	89.4	68.8	48.2	8.3	4.1	4.1
51°	209.1	166.5	128.0	101.8	90.8	72.9	56.4	38.5	8.3	4.1	4.1
52°	165.1	129.3	100.4	78.4	72.9	59.2	46.8	31.6	6.9	4.1	4.1
53°	126.6	97.7	75.7	61.9	57.8	48.2	38.5	26.1	5.5	4.1	4.1
54°	93.6	74.3	59.2	48.2	46.8	38.5	31.6	22.0	5.5	4.1	4.1
55°	68.8	57.8	45.4	38.5	37.1	31.6	26.1	17.9	5.5	4.1	4.1
57.5°	35.8	30.3	24.8	22.0	22.0	20.6	17.9	11.0	4.1	2.8	4.1
60°	19.3	16.5	13.8	12.4	15.1	13.8	12.4	6.9	4.1	2.8	4.1
61°	15.1	13.8	11.0	9.6	12.4	11.0	11.0	5.5	4.1	4.1	4.1
62°	12.4	11.0	9.6	8.3	11.0	9.6	9.6	5.5	4.1	4.1	4.1
63°	9.6	8.3	6.9	6.9	9.6	9.6	8.3	4.1	4.1	4.1	4.1
64°	6.9	6.9	5.5	5.5	8.3	8.3	6.9	4.1	4.1	4.1	4.1
65°	5.5	5.5	4.1	4.1	6.9	6.9	6.9	4.1	4.1	4.1	4.1
66°	4.1	4.1	4.1	2.8	5.5	6.9	6.9	2.8	4.1	4.1	4.1



TEST NUMBER: P170701

CATALOG NUMBER: LDA4A28827D010TE 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°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	4.1
75°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	4.1
77.5°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	5.5
80°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	5.5
82.5°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	5.5
85°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	5.5
87.5°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	5.5
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: P170701

CATALOG NUMBER: LDA4A28827D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	159.6	159.6	159.6
2.5°	119.7	112.8	111.4
5°	99.1	92.2	90.8
7.5°	90.8	85.3	83.9
10°	93.6	94.9	97.7
12.5°	119.7	132.1	143.1
15°	192.6	242.1	276.5
17.5°	335.7	371.5	394.9
20°	294.4	271.0	272.4
22.5°	165.1	148.6	147.2
25°	100.4	90.8	88.1
26°	83.9	75.7	72.9
27°	68.8	61.9	59.2
28°	56.4	50.9	49.5
29°	48.2	41.3	39.9
30°	39.9	34.4	33.0
31°	33.0	28.9	27.5
32°	28.9	24.8	22.0
33°	23.4	20.6	19.3
34°	20.6	16.5	15.1
35°	16.5	13.8	13.8
36°	15.1	12.4	11.0
37°	12.4	9.6	9.6
38°	11.0	8.3	6.9
39°	9.6	6.9	5.5
40°	8.3	5.5	4.1
42.5°	5.5	2.8	1.4
45°	4.1	1.4	0.0
47.5°	2.8	1.4	0.0
50°	2.8	0.0	0.0
51°	2.8	0.0	0.0
52°	2.8	0.0	0.0
53°	2.8	0.0	0.0
54°	2.8	0.0	0.0
55°	2.8	0.0	0.0
57.5°	2.8	0.0	0.0
60°	2.8	0.0	0.0
61°	2.8	0.0	0.0
62°	2.8	0.0	0.0
63°	2.8	1.4	0.0
64°	2.8	1.4	0.0
65°	2.8	1.4	0.0
66°	2.8	1.4	0.0



TEST NUMBER: P170701

CATALOG NUMBER: LDA4A28827D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	4.1	1.4	0.0
75°	4.1	1.4	0.0
77.5°	4.1	1.4	0.0
80°	4.1	1.4	0.0
82.5°	4.1	1.4	0.0
85°	4.1	1.4	0.0
87.5°	2.8	1.4	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	4.1	2.8
70°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	1.4	1.4





67.5°	2.8	2.8	2.8	2.8	5.5	5.5	5.5	2.8	4.1	4.1	4.1
70°	1.4	1.4	1.4	2.8	4.1	5.5	5.5	2.8	4.1	4.1	4.1





67.5°	2.8	1.4	0.0
70°	2.8	1.4	0.0



(END OF REPORT)