

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: P209022

Luminaire Tested: **LDSQA6A65835D010TE LARH20SP 6LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209022
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26686)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDSQA6A65835D010TE LARH20SP 6LSQA1H 30°
Description: PORTFOLIO 6" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,
SELF-FLANGED, 20° SPOT, 30° Tilt
Light Source: (1) HIGH LUMEN LED 80CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5512.2 lumens
Efficiency: N/A
Efficacy: 70.1 lumens/watt
Spacing Criteria (0/90/45): 2.35 / 0.6 / 1.31
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
CIE Type: Direct

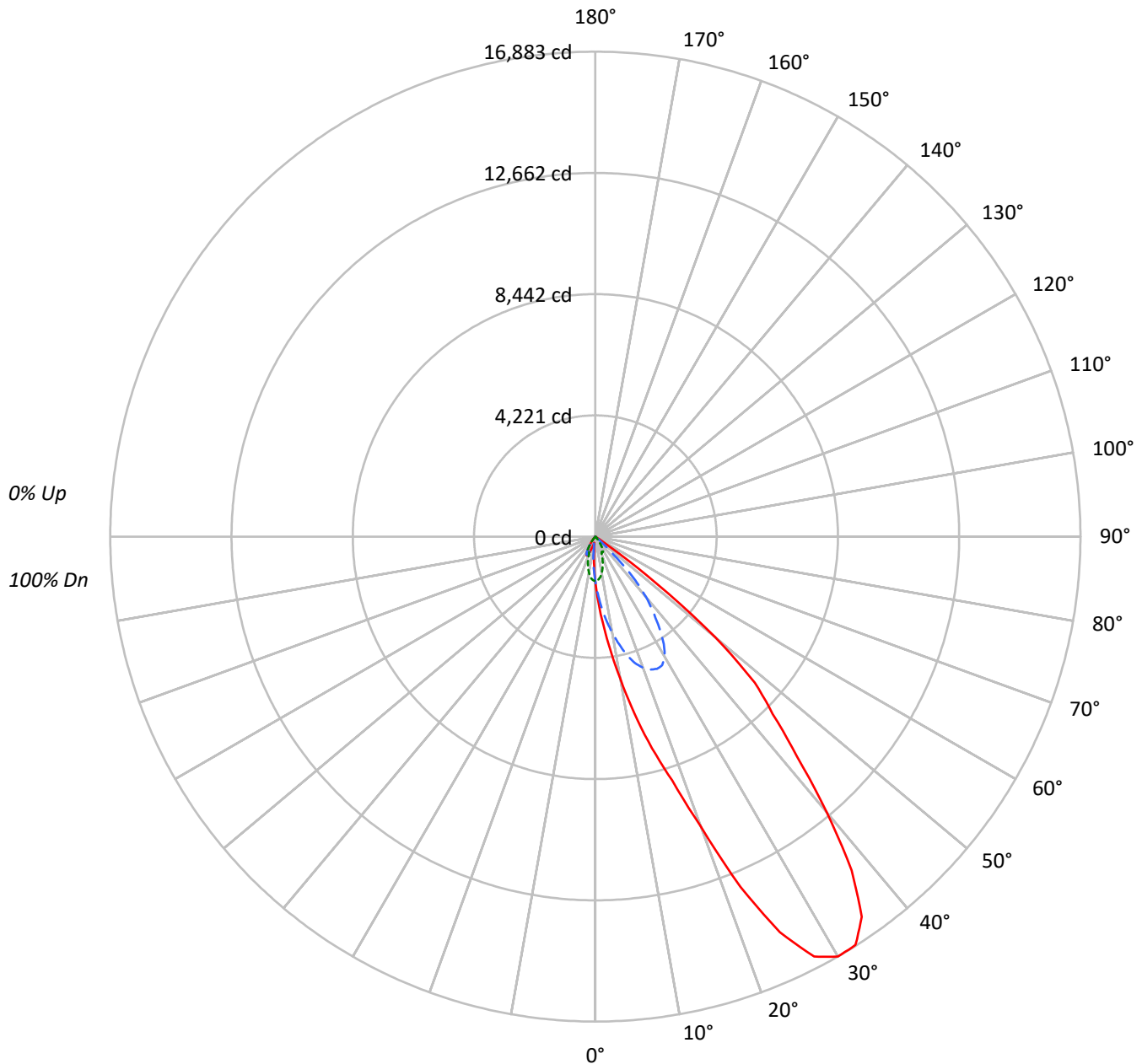
Input Watts (W): 78.67
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P209022

CATALOG NUMBER: LDSQA6A65835D010TE LARH20SP 6LSQA1H 30°

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
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50
RCR																	
0	119	119	119	119	116	116	116	116	111	111	111		106	106	106		102
1	112	109	106	104	110	107	104	102	103	101	99		99	97	96		96
2	105	100	95	91	103	98	94	90	95	91	88		92	89	86		89
3	99	91	85	80	96	89	84	80	87	82	78		84	80	77		82
4	92	83	76	71	90	82	76	71	79	74	70		77	73	69		75
5	86	76	69	64	84	75	68	63	73	67	63		71	66	62		69
6	80	69	62	57	79	69	62	57	67	61	56		65	60	56		64
7	75	64	56	51	73	63	56	51	62	55	51		60	55	50		59
8	70	59	51	46	69	58	51	46	57	50	46		56	50	46		54
9	66	54	47	42	64	53	47	42	52	46	42		51	46	42		50
10	61	50	43	38	60	49	43	38	48	42	38		48	42	38		47

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	66999	66999	66999
5°	129825	63849	21537
10°	220571	55874	9671
15°	339885	44566	15378
20°	492021	29003	26744
25°	721883	27991	34390
30°	839362	26514	26350
35°	849574	14044	13929
40°	703391	5295	5845
45°	531240	1802	2131
50°	363462	663	663
55°	50556	578	83
60°	1318	568	0
65°	336	784	0
70°	138	969	0
75°	0	1281	0
80°	0	2182	273
85°	0	4347	0



TEST NUMBER: P209022

CATALOG NUMBER: LDSQA6A65835D010TE LARH20SP 6LSQA1H 30°

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	163.3	3.0
10°-20°	690.1	12.5
20°-30°	1574.2	28.6
30°-40°	1821.8	33.0
40°-50°	1098.7	19.9
50°-60°	149.3	2.7
60°-70°	4.8	0.1
70°-80°	5.2	0.1
80°-90°	4.9	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°	2427.6	44.0
0°-40°	4249.3	77.1
0°-60°	5497.2	99.7
0°-90°	5512.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5512.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1556	1556	1556	1556	1556	
5°	3004	2460	1477	808	498	350
15°	7625	4286	1000	308	345	2257
25°	15195	5079	589	708	724	6877
35°	16164	3872	267	273	265	9741
45°	8725	1055	30	36	35	6822
55°	674	8	8	6	1	1320
65°	3	4	8	4	0	5
75°	0	6	8	6	0	0
85°	0	6	9	6	0	0
90°	0	0	0	0	0	



TEST NUMBER: P209022

CATALOG NUMBER: LDSQA6A65835D010TE LARH20SP 6LSQA1H 30°

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1
2.5°	2250.4	2229.6	2238.4	2215.4	2157.3	2145.3	2144.2	2128.8	2079.6	2041.2	1995.2
5°	3003.8	3002.7	3008.2	2958.9	2857.1	2825.3	2810.0	2772.8	2653.4	2561.4	2459.6
7.5°	3944.5	3937.9	3931.4	3841.6	3681.7	3620.4	3580.9	3446.2	3282.0	3118.8	2937.0
10°	5045.1	5041.8	5016.6	4858.9	4602.7	4489.9	4413.2	4199.7	3935.7	3703.6	3394.8
12.5°	6323.0	6293.5	6248.6	6017.5	5666.0	5543.3	5374.7	5036.3	4631.1	4275.2	3843.8
15°	7625.1	7582.4	7502.4	7205.7	6769.8	6560.7	6351.5	5905.8	5356.1	4839.2	4286.2
17.5°	8898.7	8851.6	8664.3	8160.6	7734.6	7479.4	7247.3	6635.1	5989.0	5324.3	4623.5
20°	10738.4	10567.6	10241.3	9447.3	8655.6	8195.6	7924.0	7276.9	6477.4	5703.2	4863.3
22.5°	13195.8	12816.9	12121.5	10831.5	9700.3	9036.7	8592.1	7731.3	6829.0	5950.7	5011.1
25°	15195.4	15023.5	14232.8	12397.5	10632.2	9850.3	9231.6	8092.7	7085.2	6116.1	5079.0
27.5°	16484.3	16441.6	15538.2	13694.1	11393.3	10367.2	9676.2	8331.4	7209.0	6151.1	5046.2
30°	16883.0	16949.8	16082.4	14134.3	11613.4	10471.2	9715.6	8334.7	7113.7	5992.3	4835.9
32.5°	16853.4	16856.7	15793.3	13754.3	11255.3	10169.0	9387.1	8057.6	6762.2	5594.8	4436.2
35°	16163.5	15993.7	14791.3	12586.9	10421.9	9463.7	8736.6	7521.1	6182.9	4996.9	3872.2
37.5°	14649.0	14426.7	13025.0	11092.1	9435.3	8549.3	7962.4	6816.9	5493.0	4358.4	3289.6
40°	12514.7	12199.3	11042.9	9702.5	8355.5	7689.7	7196.9	6029.5	4754.9	3732.1	2743.2
42.5°	10378.1	10223.7	9459.4	8369.7	7447.7	6821.3	6306.6	5204.9	4045.3	3114.4	2052.2
45°	8724.6	8592.1	8078.5	7360.1	6455.5	5883.9	5387.8	4345.3	3142.9	2089.4	1054.6
47.5°	7520.0	7412.6	6920.9	6166.4	5174.3	4549.0	4037.6	2849.4	1780.6	902.4	263.9
50°	5426.2	5316.6	4834.8	3960.9	3065.1	2541.7	2173.7	1272.5	504.8	182.9	27.4
52.5°	2660.0	2570.2	2242.7	1678.8	1126.8	810.4	592.4	238.7	58.0	19.7	13.1
55°	673.5	618.7	515.8	324.1	158.8	95.3	61.3	21.9	14.2	11.0	7.7
57.5°	38.3	37.2	33.9	25.2	18.6	16.4	14.2	11.0	7.7	6.6	5.5
60°	15.3	14.2	13.1	11.0	8.8	7.7	7.7	5.5	4.4	4.4	4.4
62.5°	6.6	6.6	6.6	5.5	4.4	4.4	4.4	3.3	4.4	4.4	4.4
65°	3.3	3.3	3.3	2.2	2.2	2.2	3.3	3.3	3.3	4.4	4.4
67.5°	2.2	1.1	1.1	1.1	2.2	2.2	2.2	3.3	3.3	4.4	4.4
70°	1.1	1.1	1.1	1.1	2.2	2.2	2.2	3.3	3.3	4.4	5.5
72.5°	0.0	1.1	1.1	1.1	2.2	2.2	2.2	3.3	3.3	4.4	5.5
75°	0.0	1.1	1.1	1.1	2.2	2.2	2.2	3.3	4.4	4.4	5.5
77.5°	0.0	1.1	1.1	1.1	2.2	2.2	2.2	3.3	4.4	4.4	5.5
80°	0.0	1.1	1.1	1.1	2.2	2.2	2.2	3.3	4.4	4.4	5.5
82.5°	0.0	0.0	1.1	1.1	2.2	2.2	2.2	3.3	4.4	4.4	5.5
85°	0.0	0.0	1.1	1.1	2.2	2.2	2.2	3.3	4.4	4.4	5.5
87.5°	0.0	0.0	1.1	1.1	2.2	2.2	2.2	3.3	3.3	4.4	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: P209022

CATALOG NUMBER: LDSQA6A65835D010TE LARH20SP 6LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1
2.5°	1936.1	1896.7	1838.7	1800.3	1763.1	1728.0	1670.0	1637.2	1578.0	1523.3	1476.2
5°	2336.9	2238.4	2119.0	2017.2	1951.4	1886.8	1769.7	1683.1	1574.7	1477.3	1387.5
7.5°	2742.1	2568.0	2372.0	2204.4	2102.6	2002.9	1827.7	1687.5	1534.2	1395.1	1262.6
10°	3110.0	2848.3	2571.3	2331.4	2193.5	2064.2	1833.2	1647.0	1449.9	1278.0	1111.5
12.5°	3451.7	3093.6	2732.2	2419.0	2248.2	2092.7	1810.2	1582.4	1348.1	1144.4	950.5
15°	3756.1	3296.2	2849.4	2469.4	2269.0	2085.0	1756.5	1491.5	1227.6	999.8	754.5
17.5°	3987.2	3422.1	2900.9	2461.8	2231.8	2027.0	1664.5	1377.6	1099.5	823.5	546.4
20°	4127.4	3475.8	2889.9	2402.6	2151.8	1935.0	1555.0	1253.9	945.1	633.0	481.8
22.5°	4186.5	3471.4	2838.5	2313.9	2053.3	1834.3	1449.9	1133.4	783.0	572.7	502.6
25°	4196.4	3426.5	2766.2	2216.5	1955.8	1737.9	1343.7	996.5	680.0	589.2	562.9
27.5°	4120.8	3321.4	2630.4	2076.3	1818.9	1593.4	1184.9	791.7	638.4	587.0	604.5
30°	3897.4	3081.6	2390.6	1829.9	1581.3	1355.7	846.5	620.9	530.0	533.3	537.7
32.5°	3504.3	2683.0	2005.1	1469.6	1198.0	893.6	526.7	415.0	403.0	403.0	400.8
35°	2979.7	2195.6	1573.6	929.7	595.7	429.3	272.7	273.8	268.3	267.2	266.1
37.5°	2437.7	1732.4	996.5	384.4	258.4	179.6	161.0	163.2	161.0	164.3	162.1
40°	1921.9	1069.9	363.6	122.6	90.9	87.6	89.8	92.0	92.0	94.2	94.2
42.5°	1117.0	354.8	95.3	49.3	49.3	47.1	48.2	50.4	51.5	52.6	51.5
45°	331.8	73.4	30.7	27.4	27.4	26.3	26.3	27.4	28.5	29.6	29.6
47.5°	52.6	20.8	17.5	15.3	15.3	15.3	15.3	15.3	16.4	16.4	17.5
50°	16.4	13.1	11.0	9.9	9.9	8.8	8.8	9.9	9.9	9.9	11.0
52.5°	9.9	7.7	7.7	6.6	7.7	7.7	6.6	7.7	7.7	7.7	8.8
55°	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	7.7	7.7	7.7
57.5°	5.5	5.5	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
60°	5.5	5.5	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	7.7
62.5°	5.5	5.5	6.6	6.6	6.6	6.6	6.6	6.6	7.7	7.7	7.7
65°	5.5	5.5	6.6	6.6	6.6	6.6	6.6	7.7	7.7	7.7	7.7
67.5°	5.5	6.6	6.6	6.6	6.6	7.7	7.7	7.7	7.7	7.7	7.7
70°	5.5	6.6	6.6	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
72.5°	5.5	6.6	6.6	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
75°	6.6	6.6	6.6	7.7	7.7	7.7	7.7	7.7	7.7	7.7	8.8
77.5°	6.6	6.6	7.7	7.7	7.7	7.7	7.7	7.7	8.8	8.8	8.8
80°	6.6	6.6	7.7	7.7	7.7	7.7	7.7	8.8	8.8	8.8	8.8
82.5°	6.6	6.6	7.7	7.7	7.7	7.7	7.7	8.8	8.8	8.8	8.8
85°	6.6	6.6	7.7	7.7	7.7	7.7	7.7	8.8	8.8	8.8	8.8
87.5°	6.6	6.6	7.7	7.7	7.7	7.7	7.7	8.8	8.8	8.8	8.8
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: P209022

CATALOG NUMBER: LDSQA6A65835D010TE LARH20SP 6LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1
2.5°	1435.7	1385.3	1361.2	1327.2	1303.2	1249.5	1227.6	1190.4	1159.7	1109.3	1112.6
5°	1310.8	1215.5	1150.9	1100.6	1065.5	980.1	923.2	862.9	808.2	740.3	715.1
7.5°	1137.8	1020.6	922.1	861.8	816.9	703.0	577.1	478.6	404.1	350.4	329.6
10°	964.8	812.6	656.0	562.9	498.3	388.8	332.9	306.6	282.5	253.0	233.3
12.5°	763.3	546.4	404.1	366.9	340.6	304.4	268.3	239.8	245.3	246.4	254.1
15°	521.3	393.1	348.2	323.1	294.6	273.8	285.8	293.5	307.7	308.8	318.7
17.5°	423.8	369.0	332.9	331.8	334.0	346.0	364.7	374.5	393.1	397.5	411.8
20°	423.8	392.0	422.7	422.7	428.2	444.6	468.7	482.9	503.7	511.4	528.9
22.5°	482.9	504.8	543.2	547.5	549.7	567.3	597.9	612.2	636.2	640.6	659.2
25°	589.2	608.9	643.9	647.2	648.3	661.4	684.4	692.1	708.5	699.8	710.7
27.5°	623.1	631.9	653.8	656.0	650.5	656.0	664.7	664.7	670.2	652.7	656.0
30°	547.5	549.7	560.7	561.8	549.7	551.9	553.0	551.9	550.8	532.2	532.2
32.5°	406.3	406.3	420.5	417.2	404.1	407.4	407.4	407.4	406.3	390.9	388.8
35°	269.4	270.5	282.5	280.3	270.5	272.7	272.7	276.0	272.7	263.9	261.7
37.5°	164.3	165.4	170.8	171.9	168.6	169.7	170.8	169.7	171.9	167.5	165.4
40°	95.3	97.5	101.8	102.9	101.8	101.8	102.9	104.0	108.4	102.9	100.7
42.5°	55.8	56.9	59.1	59.1	59.1	59.1	60.2	61.3	62.4	61.3	60.2
45°	31.8	32.9	33.9	33.9	35.0	33.9	35.0	35.0	36.1	35.0	35.0
47.5°	18.6	18.6	19.7	19.7	20.8	19.7	20.8	20.8	20.8	19.7	19.7
50°	11.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	11.0	11.0
52.5°	8.8	8.8	8.8	8.8	8.8	7.7	7.7	7.7	7.7	6.6	6.6
55°	7.7	7.7	7.7	7.7	7.7	7.7	6.6	5.5	5.5	4.4	4.4
57.5°	6.6	7.7	7.7	7.7	7.7	6.6	6.6	5.5	4.4	3.3	3.3
60°	7.7	7.7	7.7	7.7	6.6	6.6	6.6	5.5	4.4	3.3	3.3
62.5°	7.7	7.7	7.7	7.7	7.7	6.6	6.6	5.5	4.4	3.3	3.3
65°	7.7	7.7	7.7	7.7	7.7	6.6	6.6	5.5	4.4	3.3	3.3
67.5°	7.7	7.7	7.7	7.7	7.7	6.6	6.6	5.5	4.4	4.4	3.3
70°	7.7	8.8	8.8	7.7	7.7	7.7	6.6	5.5	5.5	4.4	3.3
72.5°	7.7	8.8	8.8	7.7	7.7	7.7	6.6	5.5	5.5	4.4	3.3
75°	8.8	8.8	8.8	8.8	7.7	7.7	6.6	6.6	5.5	4.4	3.3
77.5°	8.8	8.8	8.8	8.8	7.7	7.7	6.6	6.6	5.5	4.4	3.3
80°	8.8	8.8	8.8	8.8	8.8	7.7	7.7	6.6	5.5	4.4	4.4
82.5°	8.8	8.8	8.8	8.8	8.8	7.7	7.7	6.6	5.5	4.4	4.4
85°	8.8	8.8	8.8	8.8	8.8	7.7	7.7	6.6	5.5	4.4	3.3
87.5°	8.8	8.8	8.8	8.8	7.7	7.7	6.6	6.6	5.5	4.4	3.3
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: P209022

CATALOG NUMBER: LDSQA6A65835D010TE LARH20SP 6LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1	1556.1
2.5°	1072.1	1046.9	1036.0	1053.5	1044.7	1018.4	1023.9	1007.5
5°	639.5	601.2	577.1	588.1	553.0	521.3	521.3	498.3
7.5°	308.8	296.8	290.2	292.4	284.7	274.9	269.4	269.4
10°	216.8	212.4	213.5	213.5	220.1	219.0	222.3	221.2
12.5°	257.3	259.5	260.6	265.0	270.5	270.5	273.8	271.6
15°	329.6	327.4	334.0	335.1	343.9	345.0	349.3	345.0
17.5°	419.4	423.8	430.4	429.3	446.8	447.9	447.9	446.8
20°	539.9	543.2	549.7	551.9	572.7	574.9	582.6	583.7
22.5°	671.3	671.3	674.6	679.0	698.7	699.8	703.0	703.0
25°	716.2	709.6	710.7	716.2	727.1	722.8	726.0	723.9
27.5°	658.1	648.3	646.1	653.8	661.4	649.4	653.8	653.8
30°	534.4	525.6	523.5	531.1	536.6	523.5	527.8	530.0
32.5°	390.9	385.5	384.4	389.9	394.2	383.3	387.7	390.9
35°	263.9	261.7	259.5	260.6	267.2	258.4	262.8	265.0
37.5°	167.5	163.2	164.3	166.5	170.8	165.4	169.7	169.7
40°	102.9	100.7	100.7	102.9	105.1	100.7	102.9	104.0
42.5°	60.2	60.2	60.2	61.3	62.4	60.2	60.2	61.3
45°	35.0	33.9	33.9	35.0	36.1	33.9	35.0	35.0
47.5°	19.7	18.6	18.6	19.7	19.7	18.6	19.7	19.7
50°	11.0	9.9	9.9	11.0	11.0	9.9	9.9	9.9
52.5°	5.5	5.5	5.5	5.5	5.5	5.5	4.4	4.4
55°	3.3	3.3	2.2	2.2	2.2	2.2	2.2	1.1
57.5°	2.2	2.2	1.1	1.1	1.1	1.1	0.0	0.0
60°	2.2	2.2	1.1	1.1	1.1	0.0	0.0	0.0
62.5°	2.2	2.2	1.1	1.1	1.1	0.0	0.0	0.0
65°	2.2	2.2	1.1	1.1	1.1	0.0	0.0	0.0
67.5°	2.2	2.2	1.1	1.1	1.1	0.0	0.0	0.0
70°	3.3	2.2	2.2	1.1	1.1	1.1	0.0	0.0
72.5°	3.3	2.2	2.2	2.2	1.1	1.1	0.0	0.0
75°	3.3	2.2	2.2	2.2	1.1	1.1	0.0	0.0
77.5°	3.3	2.2	2.2	2.2	1.1	1.1	1.1	0.0
80°	3.3	2.2	2.2	2.2	1.1	1.1	1.1	1.1
82.5°	3.3	2.2	2.2	2.2	1.1	1.1	1.1	1.1
85°	3.3	2.2	2.2	2.2	1.1	1.1	1.1	0.0
87.5°	3.3	2.2	2.2	2.2	1.1	1.1	1.1	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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— 0°-180° - - 45°-225° - - - 90°-270°













(END OF REPORT)