

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: P209006

Luminaire Tested: **LDSQA6A45835D010TE LARH20SP 6LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209006
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: LDSQA6A45835D010TE 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: 4282.7 lumens
Efficiency: N/A
Efficacy: 78.7 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

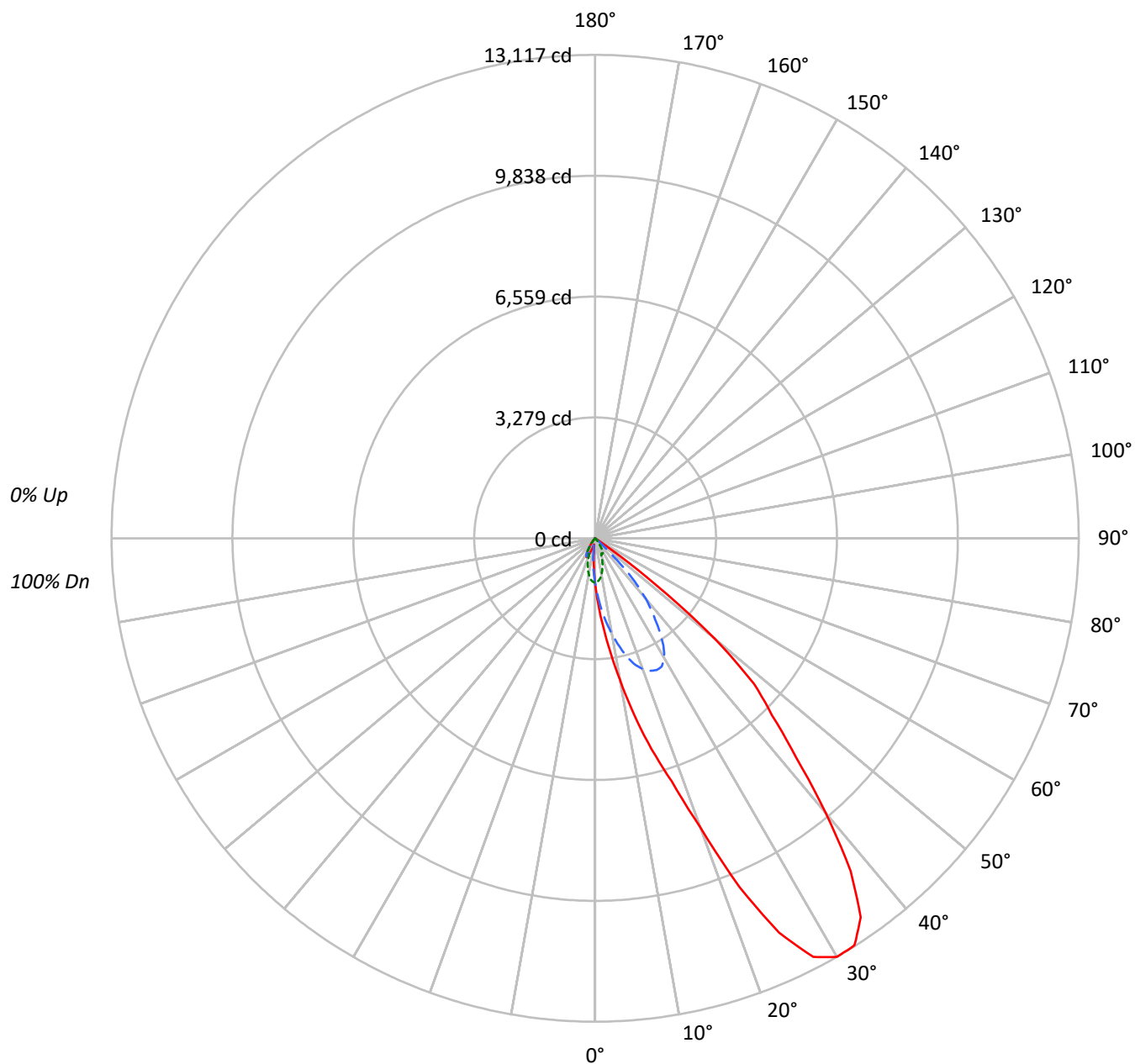
Input Watts (W): 54.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
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	94	90	95	91	88	92	89	86	89	86	84	82		
3	99	91	85	80	96	89	84	80	87	82	78	84	80	77	82	79	76	74		
4	92	83	76	71	90	82	76	71	79	74	70	77	73	69	75	71	68	66		
5	86	76	69	64	84	75	68	63	73	67	63	71	66	62	69	65	61	60		
6	80	69	62	57	79	69	62	57	67	61	56	65	60	56	64	59	55	54		
7	75	64	56	51	73	63	56	51	62	55	51	60	55	50	59	54	50	49		
8	70	59	51	46	69	58	51	46	57	50	46	56	50	46	54	49	45	44		
9	66	54	47	42	64	53	47	42	52	46	42	51	46	42	50	45	41	40		
10	61	50	43	38	60	49	43	38	48	42	38	48	42	38	47	41	38	36		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	52054	52054	52054
5°	100867	49608	16731
10°	171369	43409	7515
15°	264073	34625	11946
20°	382271	22534	20779
25°	560864	21744	26718
30°	652135	20598	20473
35°	660070	10912	10822
40°	546494	4114	4541
45°	412742	1400	1656
50°	282386	516	516
55°	39282	450	68
60°	1025	439	0
65°	265	611	0
70°	113	755	0
75°	0	998	0
80°	0	1686	223
85°	0	3359	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	126.8	3.0
10°-20°	536.2	12.5
20°-30°	1223.1	28.6
30°-40°	1415.4	33.0
40°-50°	853.6	19.9
50°-60°	116.0	2.7
60°-70°	3.8	0.1
70°-80°	4.1	0.1
80°-90°	3.8	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°	1886.1	44.0
0°-40°	3301.5	77.1
0°-60°	4271.0	99.7
0°-90°	4282.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4282.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1209	1209	1209	1209	1209	
5°	2334	1911	1148	628	387	272
15°	5924	3330	777	239	268	1754
25°	11806	3946	458	550	562	5343
35°	12558	3008	208	212	206	7568
45°	6778	819	23	28	27	5300
55°	523	6	6	4	1	1026
65°	3	3	6	3	0	4
75°	0	4	6	4	0	0
85°	0	4	7	4	0	0
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0
2.5°	1748.4	1732.3	1739.1	1721.2	1676.1	1666.8	1665.9	1654.0	1615.7	1585.9	1550.2
5°	2333.8	2332.9	2337.2	2298.9	2219.8	2195.1	2183.2	2154.3	2061.5	1990.1	1910.9
7.5°	3064.6	3059.5	3054.4	2984.7	2860.5	2812.8	2782.2	2677.5	2549.9	2423.1	2281.9
10°	3919.7	3917.2	3897.6	3775.1	3576.0	3488.4	3428.8	3262.9	3057.8	2877.5	2637.5
12.5°	4912.6	4889.7	4854.8	4675.2	4402.1	4306.8	4175.8	3912.9	3598.1	3321.6	2986.4
15°	5924.3	5891.1	5829.0	5598.4	5259.8	5097.3	4934.7	4588.5	4161.4	3759.8	3330.1
17.5°	6913.8	6877.2	6731.7	6340.3	6009.3	5811.1	5630.7	5155.1	4653.1	4136.7	3592.2
20°	8343.1	8210.4	7956.9	7340.0	6724.9	6367.5	6156.5	5653.7	5032.6	4431.1	3778.5
22.5°	10252.4	9958.0	9417.7	8415.4	7536.6	7021.0	6675.5	6006.8	5305.7	4623.3	3893.3
25°	11806.0	11672.4	11058.1	9632.1	8260.6	7653.1	7172.4	6287.6	5504.8	4751.8	3946.1
27.5°	12807.4	12774.2	12072.3	10639.5	8851.9	8054.7	7517.8	6473.0	5600.9	4779.0	3920.6
30°	13117.1	13169.0	12495.1	10981.5	9022.9	8135.5	7548.5	6475.6	5526.9	4655.7	3757.2
32.5°	13094.1	13096.7	12270.5	10686.3	8744.7	7900.7	7293.2	6260.3	5253.8	4346.8	3446.7
35°	12558.1	12426.2	11492.0	9779.3	8097.2	7352.8	6787.8	5843.4	4803.7	3882.3	3008.5
37.5°	11381.4	11208.7	10119.6	8617.9	7330.7	6642.3	6186.3	5296.3	4267.7	3386.3	2555.9
40°	9723.2	9478.1	8579.7	7538.3	6491.7	5974.4	5591.6	4684.6	3694.3	2899.6	2131.3
42.5°	8063.2	7943.2	7349.4	6502.8	5786.4	5299.8	4899.9	4043.9	3142.9	2419.7	1594.4
45°	6778.5	6675.5	6276.5	5718.4	5015.6	4571.4	4186.0	3376.0	2441.8	1623.4	819.3
47.5°	5842.6	5759.2	5377.2	4791.0	4020.1	3534.3	3137.0	2213.8	1383.4	701.1	205.0
50°	4215.8	4130.7	3756.4	3077.4	2381.4	1974.8	1688.9	988.7	392.2	142.1	21.3
52.5°	2066.6	1996.9	1742.5	1304.3	875.5	629.6	460.3	185.5	45.1	15.3	10.2
55°	523.3	480.7	400.7	251.8	123.4	74.0	47.6	17.0	11.1	8.5	6.0
57.5°	29.8	28.9	26.4	19.6	14.5	12.8	11.1	8.5	6.0	5.1	4.3
60°	11.9	11.1	10.2	8.5	6.8	6.0	6.0	4.3	3.4	3.4	3.4
62.5°	5.1	5.1	5.1	4.3	3.4	3.4	3.4	2.6	3.4	3.4	3.4
65°	2.6	2.6	2.6	1.7	1.7	1.7	2.6	2.6	2.6	3.4	3.4
67.5°	1.7	0.9	0.9	0.9	1.7	1.7	1.7	2.6	2.6	3.4	3.4
70°	0.9	0.9	0.9	0.9	1.7	1.7	1.7	2.6	2.6	3.4	4.3
72.5°	0.0	0.9	0.9	0.9	1.7	1.7	1.7	2.6	2.6	3.4	4.3
75°	0.0	0.9	0.9	0.9	1.7	1.7	1.7	2.6	3.4	3.4	4.3
77.5°	0.0	0.9	0.9	0.9	1.7	1.7	1.7	2.6	3.4	3.4	4.3
80°	0.0	0.9	0.9	0.9	1.7	1.7	1.7	2.6	3.4	3.4	4.3
82.5°	0.0	0.0	0.9	0.9	1.7	1.7	1.7	2.6	3.4	3.4	4.3
85°	0.0	0.0	0.9	0.9	1.7	1.7	1.7	2.6	3.4	3.4	4.3
87.5°	0.0	0.0	0.9	0.9	1.7	1.7	1.7	2.6	2.6	3.4	4.3
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0
2.5°	1504.2	1473.6	1428.5	1398.7	1369.8	1342.6	1297.5	1272.0	1226.0	1183.5	1146.9
5°	1815.6	1739.1	1646.3	1567.2	1516.2	1466.0	1374.9	1307.7	1223.5	1147.8	1078.0
7.5°	2130.5	1995.2	1842.9	1712.7	1633.6	1556.1	1420.0	1311.1	1192.0	1083.9	981.0
10°	2416.3	2213.0	1997.7	1811.4	1704.2	1603.8	1424.3	1279.6	1126.5	992.9	863.6
12.5°	2681.8	2403.6	2122.8	1879.5	1746.7	1625.9	1406.4	1229.4	1047.4	889.1	738.5
15°	2918.3	2561.0	2213.8	1918.6	1762.9	1620.0	1364.7	1158.8	953.8	776.8	586.2
17.5°	3097.8	2658.8	2253.8	1912.6	1734.0	1574.9	1293.2	1070.3	854.2	639.8	424.6
20°	3206.7	2700.5	2245.3	1866.7	1671.9	1503.4	1208.2	974.2	734.3	491.8	374.4
22.5°	3252.7	2697.1	2205.3	1797.8	1595.3	1425.1	1126.5	880.6	608.3	445.0	390.5
25°	3260.3	2662.2	2149.2	1722.1	1519.6	1350.2	1044.0	774.2	528.4	457.7	437.3
27.5°	3201.6	2580.5	2043.7	1613.2	1413.2	1237.9	920.6	615.1	496.0	456.0	469.7
30°	3028.1	2394.2	1857.3	1421.7	1228.6	1053.3	657.7	482.4	411.8	414.3	417.8
32.5°	2722.6	2084.5	1557.8	1141.8	930.8	694.3	409.2	322.5	313.1	313.1	311.4
35°	2315.1	1705.9	1222.6	722.3	462.8	333.5	211.9	212.7	208.5	207.6	206.7
37.5°	1893.9	1346.0	774.2	298.6	200.8	139.5	125.1	126.8	125.1	127.6	125.9
40°	1493.2	831.2	282.5	95.3	70.6	68.1	69.8	71.5	71.5	73.2	73.2
42.5°	867.8	275.7	74.0	38.3	38.3	36.6	37.4	39.1	40.0	40.8	40.0
45°	257.8	57.0	23.8	21.3	21.3	20.4	20.4	21.3	22.1	23.0	23.0
47.5°	40.8	16.2	13.6	11.9	11.9	11.9	11.9	11.9	12.8	12.8	13.6
50°	12.8	10.2	8.5	7.7	7.7	6.8	6.8	7.7	7.7	7.7	8.5
52.5°	7.7	6.0	6.0	5.1	6.0	6.0	5.1	6.0	6.0	6.0	6.8
55°	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	6.0	6.0	6.0
57.5°	4.3	4.3	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
60°	4.3	4.3	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	6.0
62.5°	4.3	4.3	5.1	5.1	5.1	5.1	5.1	5.1	6.0	6.0	6.0
65°	4.3	4.3	5.1	5.1	5.1	5.1	5.1	6.0	6.0	6.0	6.0
67.5°	4.3	5.1	5.1	5.1	5.1	6.0	6.0	6.0	6.0	6.0	6.0
70°	4.3	5.1	5.1	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
72.5°	4.3	5.1	5.1	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
75°	5.1	5.1	5.1	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.8
77.5°	5.1	5.1	6.0	6.0	6.0	6.0	6.0	6.0	6.8	6.8	6.8
80°	5.1	5.1	6.0	6.0	6.0	6.0	6.0	6.8	6.8	6.8	6.8
82.5°	5.1	5.1	6.0	6.0	6.0	6.0	6.0	6.8	6.8	6.8	6.8
85°	5.1	5.1	6.0	6.0	6.0	6.0	6.0	6.8	6.8	6.8	6.8
87.5°	5.1	5.1	6.0	6.0	6.0	6.0	6.0	6.8	6.8	6.8	6.8
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):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0
2.5°	1115.4	1076.3	1057.6	1031.2	1012.5	970.8	953.8	924.8	901.0	861.9	864.4
5°	1018.4	944.4	894.2	855.1	827.8	761.5	717.2	670.4	627.9	575.2	555.6
7.5°	884.0	793.0	716.4	669.6	634.7	546.2	448.4	371.8	314.0	272.3	256.1
10°	749.6	631.3	509.6	437.3	387.1	302.0	258.6	238.2	219.5	196.5	181.2
12.5°	593.0	424.6	314.0	285.0	264.6	236.5	208.5	186.3	190.6	191.4	197.4
15°	405.0	305.4	270.6	251.0	228.9	212.7	222.1	228.0	239.1	239.9	247.6
17.5°	329.3	286.7	258.6	257.8	259.5	268.9	283.3	291.0	305.4	308.8	319.9
20°	329.3	304.6	328.4	328.4	332.7	345.4	364.2	375.2	391.4	397.3	410.9
22.5°	375.2	392.2	422.0	425.4	427.1	440.7	464.5	475.6	494.3	497.7	512.2
25°	457.7	473.1	500.3	502.8	503.7	513.9	531.8	537.7	550.5	543.7	552.2
27.5°	484.1	490.9	507.9	509.6	505.4	509.6	516.4	516.4	520.7	507.1	509.6
30°	425.4	427.1	435.6	436.5	427.1	428.8	429.7	428.8	428.0	413.5	413.5
32.5°	315.7	315.7	326.7	324.2	314.0	316.5	316.5	316.5	315.7	303.7	302.0
35°	209.3	210.2	219.5	217.8	210.2	211.9	211.9	214.4	211.9	205.0	203.3
37.5°	127.6	128.5	132.7	133.6	131.0	131.9	132.7	131.9	133.6	130.2	128.5
40°	74.0	75.7	79.1	80.0	79.1	79.1	80.0	80.8	84.2	80.0	78.3
42.5°	43.4	44.2	45.9	45.9	45.9	45.9	46.8	47.6	48.5	47.6	46.8
45°	24.7	25.5	26.4	26.4	27.2	26.4	27.2	27.2	28.1	27.2	27.2
47.5°	14.5	14.5	15.3	15.3	16.2	15.3	16.2	16.2	16.2	15.3	15.3
50°	8.5	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	8.5	8.5
52.5°	6.8	6.8	6.8	6.8	6.8	6.0	6.0	6.0	6.0	5.1	5.1
55°	6.0	6.0	6.0	6.0	6.0	6.0	5.1	4.3	4.3	3.4	3.4
57.5°	5.1	6.0	6.0	6.0	6.0	5.1	5.1	4.3	3.4	2.6	2.6
60°	6.0	6.0	6.0	6.0	5.1	5.1	5.1	4.3	3.4	2.6	2.6
62.5°	6.0	6.0	6.0	6.0	6.0	5.1	5.1	4.3	3.4	2.6	2.6
65°	6.0	6.0	6.0	6.0	6.0	5.1	5.1	4.3	3.4	2.6	2.6
67.5°	6.0	6.0	6.0	6.0	6.0	5.1	5.1	4.3	3.4	3.4	2.6
70°	6.0	6.8	6.8	6.0	6.0	6.0	5.1	4.3	4.3	3.4	2.6
72.5°	6.0	6.8	6.8	6.0	6.0	6.0	5.1	4.3	4.3	3.4	2.6
75°	6.8	6.8	6.8	6.8	6.0	6.0	5.1	5.1	4.3	3.4	2.6
77.5°	6.8	6.8	6.8	6.8	6.0	6.0	5.1	5.1	4.3	3.4	2.6
80°	6.8	6.8	6.8	6.8	6.8	6.0	6.0	5.1	4.3	3.4	3.4
82.5°	6.8	6.8	6.8	6.8	6.8	6.0	6.0	5.1	4.3	3.4	3.4
85°	6.8	6.8	6.8	6.8	6.8	6.0	6.0	5.1	4.3	3.4	2.6
87.5°	6.8	6.8	6.8	6.8	6.0	6.0	5.1	5.1	4.3	3.4	2.6
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: P209006

CATALOG NUMBER: LDSQA6A45835D010TE LARH20SP 6LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0	1209.0
2.5°	833.0	813.4	804.9	818.5	811.7	791.3	795.5	782.8
5°	496.9	467.1	448.4	456.9	429.7	405.0	405.0	387.1
7.5°	239.9	230.6	225.5	227.2	221.2	213.6	209.3	209.3
10°	168.5	165.1	165.9	165.9	171.0	170.2	172.7	171.9
12.5°	199.9	201.6	202.5	205.9	210.2	210.2	212.7	211.0
15°	256.1	254.4	259.5	260.4	267.2	268.0	271.4	268.0
17.5°	325.9	329.3	334.4	333.5	347.1	348.0	348.0	347.1
20°	419.5	422.0	427.1	428.8	445.0	446.7	452.6	453.5
22.5°	521.6	521.6	524.1	527.5	542.8	543.7	546.2	546.2
25°	556.4	551.3	552.2	556.4	564.9	561.5	564.1	562.4
27.5°	511.3	503.7	502.0	507.9	513.9	504.5	507.9	507.9
30°	415.2	408.4	406.7	412.6	416.9	406.7	410.1	411.8
32.5°	303.7	299.5	298.6	302.9	306.3	297.8	301.2	303.7
35°	205.0	203.3	201.6	202.5	207.6	200.8	204.2	205.9
37.5°	130.2	126.8	127.6	129.3	132.7	128.5	131.9	131.9
40°	80.0	78.3	78.3	80.0	81.7	78.3	80.0	80.8
42.5°	46.8	46.8	46.8	47.6	48.5	46.8	46.8	47.6
45°	27.2	26.4	26.4	27.2	28.1	26.4	27.2	27.2
47.5°	15.3	14.5	14.5	15.3	15.3	14.5	15.3	15.3
50°	8.5	7.7	7.7	8.5	8.5	7.7	7.7	7.7
52.5°	4.3	4.3	4.3	4.3	4.3	4.3	3.4	3.4
55°	2.6	2.6	1.7	1.7	1.7	1.7	1.7	0.9
57.5°	1.7	1.7	0.9	0.9	0.9	0.9	0.0	0.0
60°	1.7	1.7	0.9	0.9	0.9	0.0	0.0	0.0
62.5°	1.7	1.7	0.9	0.9	0.9	0.0	0.0	0.0
65°	1.7	1.7	0.9	0.9	0.9	0.0	0.0	0.0
67.5°	1.7	1.7	0.9	0.9	0.9	0.0	0.0	0.0
70°	2.6	1.7	1.7	0.9	0.9	0.9	0.0	0.0
72.5°	2.6	1.7	1.7	1.7	0.9	0.9	0.0	0.0
75°	2.6	1.7	1.7	1.7	0.9	0.9	0.0	0.0
77.5°	2.6	1.7	1.7	1.7	0.9	0.9	0.9	0.0
80°	2.6	1.7	1.7	1.7	0.9	0.9	0.9	0.9
82.5°	2.6	1.7	1.7	1.7	0.9	0.9	0.9	0.9
85°	2.6	1.7	1.7	1.7	0.9	0.9	0.9	0.0
87.5°	2.6	1.7	1.7	1.7	0.9	0.9	0.9	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)