

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: P209010

Luminaire Tested: **LDSQA6A45935D010TE LARH20SP 6LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209010
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: LDSQA6A45935D010TE LARH20SP 6LSQA1H 30°
Description: PORTFOLIO 6" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,
SELF-FLANGED, 20° SPOT, 30° Tilt
Light Source: (1) HIGH LUMEN LED 90CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3661.4 lumens
Efficiency: N/A
Efficacy: 67.3 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

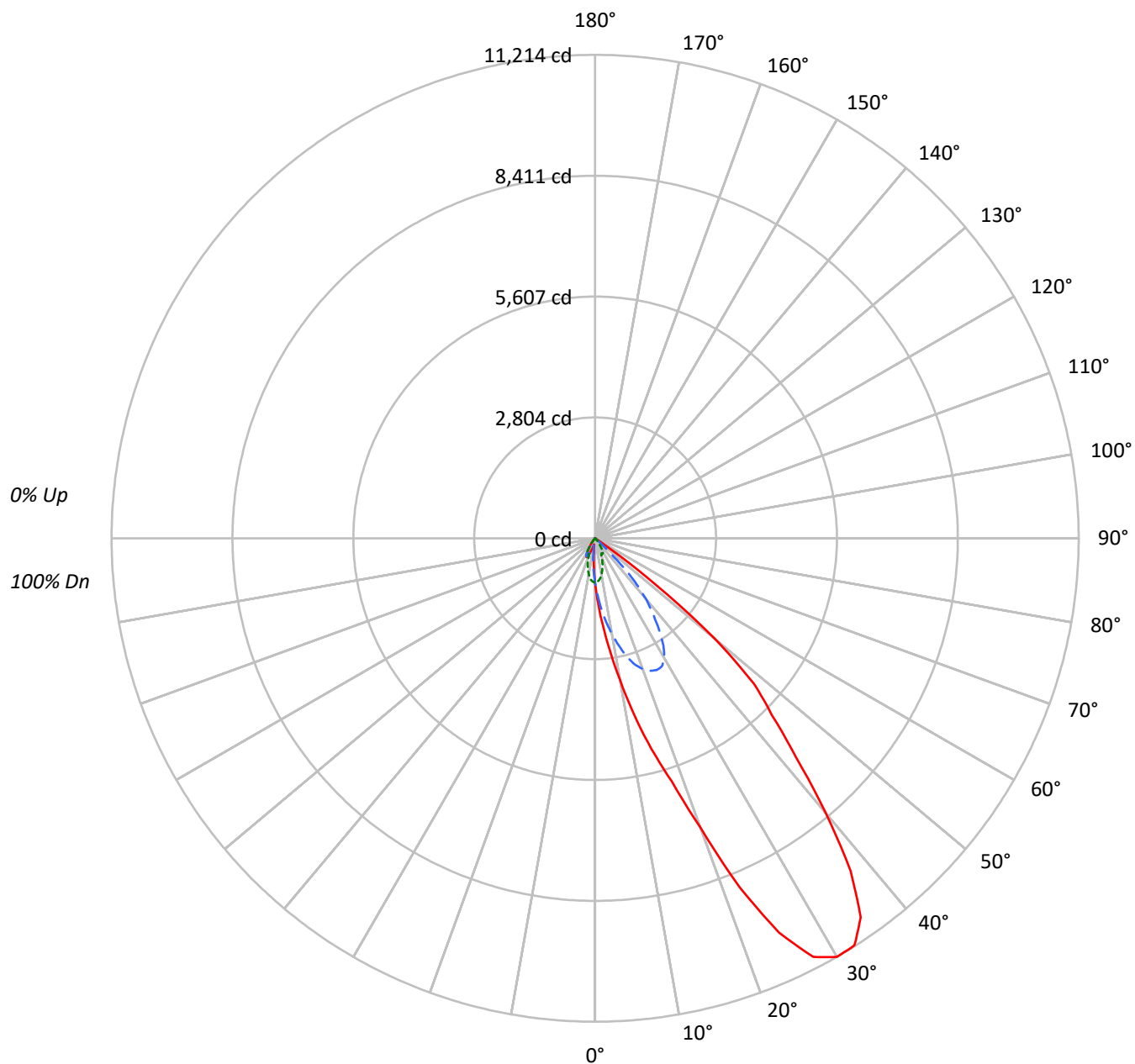
Input Watts (W): 54.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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					10
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°	44502	44502	44502
5°	86237	42412	14306
10°	146510	37114	6422
15°	225765	29602	10212
20°	326821	19262	17764
25°	479504	18589	22841
30°	557535	17610	17505
35°	564319	9330	9251
40°	467217	3518	3884
45°	352869	1193	1419
50°	241426	435	435
55°	33584	383	53
60°	878	379	0
65°	224	520	0
70°	88	642	0
75°	0	848	0
80°	0	1438	174
85°	0	2865	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	108.4	3.0
10°-20°	458.4	12.5
20°-30°	1045.7	28.6
30°-40°	1210.1	33.0
40°-50°	729.8	19.9
50°-60°	99.1	2.7
60°-70°	3.2	0.1
70°-80°	3.5	0.1
80°-90°	3.2	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°	1612.5	44.0
0°-40°	2822.6	77.1
0°-60°	3651.5	99.7
0°-90°	3661.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3661.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1034	1034	1034	1034	1034	
5°	1995	1634	981	537	331	232
15°	5065	2847	664	204	229	1499
25°	10093	3374	391	471	481	4568
35°	10736	2572	178	181	176	6470
45°	5795	700	20	24	23	4532
55°	447	5	5	4	1	877
65°	2	3	5	3	0	3
75°	0	4	5	4	0	0
85°	0	4	6	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°	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6
2.5°	1494.8	1481.0	1486.8	1471.5	1433.0	1425.0	1424.2	1414.1	1381.3	1355.9	1325.3
5°	1995.3	1994.5	1998.2	1965.4	1897.8	1876.7	1866.5	1841.8	1762.5	1701.4	1633.7
7.5°	2620.1	2615.7	2611.4	2551.7	2445.5	2404.8	2378.6	2289.1	2180.0	2071.6	1950.9
10°	3351.1	3348.9	3332.2	3227.5	3057.3	2982.3	2931.4	2789.6	2614.3	2460.1	2254.9
12.5°	4200.0	4180.4	4150.5	3997.1	3763.6	3682.1	3570.1	3345.3	3076.2	2839.8	2553.2
15°	5064.9	5036.5	4983.4	4786.3	4496.8	4357.9	4218.9	3922.9	3557.7	3214.4	2847.0
17.5°	5910.9	5879.6	5755.2	5420.6	5137.6	4968.1	4813.9	4407.3	3978.2	3536.6	3071.1
20°	7132.9	7019.4	6802.6	6275.3	5749.4	5443.9	5263.5	4833.6	4302.6	3788.3	3230.4
22.5°	8765.2	8513.5	8051.6	7194.7	6443.3	6002.5	5707.2	5135.4	4536.1	3952.7	3328.6
25°	10093.4	9979.2	9454.0	8234.9	7062.3	6543.0	6132.0	5375.5	4706.3	4062.5	3373.7
27.5°	10949.6	10921.2	10321.1	9096.1	7567.9	6886.3	6427.3	5534.1	4788.5	4085.8	3351.9
30°	11214.3	11258.7	10682.6	9388.6	7714.1	6955.4	6453.5	5536.2	4725.2	3980.3	3212.2
32.5°	11194.7	11196.9	10490.6	9136.1	7476.2	6754.6	6235.3	5352.2	4491.7	3716.3	2946.7
35°	10736.4	10623.7	9825.0	8360.7	6922.7	6286.2	5803.2	4995.8	4106.9	3319.1	2572.1
37.5°	9730.4	9582.8	8651.7	7367.8	6267.3	5678.8	5288.9	4528.1	3648.6	2895.1	2185.1
40°	8312.7	8103.2	7335.1	6444.8	5550.1	5107.8	4780.5	4005.1	3158.4	2479.0	1822.1
42.5°	6893.6	6791.0	6283.3	5559.5	4947.0	4531.0	4189.1	3457.3	2687.0	2068.7	1363.1
45°	5795.2	5707.2	5366.0	4888.9	4288.0	3908.3	3578.8	2886.3	2087.6	1387.9	700.5
47.5°	4995.1	4923.8	4597.2	4096.0	3437.0	3021.6	2681.9	1892.7	1182.8	599.4	175.3
50°	3604.3	3531.5	3211.5	2631.0	2036.0	1688.3	1443.9	845.2	335.3	121.5	18.2
52.5°	1766.9	1707.2	1489.7	1115.1	748.5	538.3	393.5	158.6	38.6	13.1	8.7
55°	447.4	411.0	342.6	215.3	105.5	63.3	40.7	14.5	9.5	7.3	5.1
57.5°	25.5	24.7	22.5	16.7	12.4	10.9	9.5	7.3	5.1	4.4	3.6
60°	10.2	9.5	8.7	7.3	5.8	5.1	5.1	3.6	2.9	2.9	2.9
62.5°	4.4	4.4	4.4	3.6	2.9	2.9	2.9	2.2	2.9	2.9	2.9
65°	2.2	2.2	2.2	1.5	1.5	1.5	2.2	2.2	2.2	2.9	2.9
67.5°	1.5	0.7	0.7	0.7	1.5	1.5	1.5	2.2	2.2	2.9	2.9
70°	0.7	0.7	0.7	0.7	1.5	1.5	1.5	2.2	2.2	2.9	3.6
72.5°	0.0	0.7	0.7	0.7	1.5	1.5	1.5	2.2	2.2	2.9	3.6
75°	0.0	0.7	0.7	0.7	1.5	1.5	1.5	2.2	2.9	2.9	3.6
77.5°	0.0	0.7	0.7	0.7	1.5	1.5	1.5	2.2	2.9	2.9	3.6
80°	0.0	0.7	0.7	0.7	1.5	1.5	1.5	2.2	2.9	2.9	3.6
82.5°	0.0	0.0	0.7	0.7	1.5	1.5	1.5	2.2	2.9	2.9	3.6
85°	0.0	0.0	0.7	0.7	1.5	1.5	1.5	2.2	2.9	2.9	3.6
87.5°	0.0	0.0	0.7	0.7	1.5	1.5	1.5	2.2	2.2	2.9	3.6
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6
2.5°	1286.0	1259.9	1221.3	1195.8	1171.1	1147.8	1109.3	1087.5	1048.2	1011.8	980.5
5°	1552.3	1486.8	1407.5	1339.9	1296.2	1253.3	1175.5	1118.0	1046.0	981.3	921.6
7.5°	1821.4	1705.8	1575.5	1464.3	1396.6	1330.4	1214.0	1120.9	1019.1	926.7	838.7
10°	2065.8	1892.0	1707.9	1548.6	1457.0	1371.1	1217.7	1094.0	963.1	848.9	738.3
12.5°	2292.8	2054.9	1814.9	1606.8	1493.4	1390.1	1202.4	1051.1	895.4	760.1	631.4
15°	2495.0	2189.5	1892.7	1640.3	1507.2	1385.0	1166.7	990.7	815.4	664.1	501.2
17.5°	2648.5	2273.1	1926.9	1635.2	1482.4	1346.4	1105.6	915.1	730.3	547.0	363.0
20°	2741.6	2308.8	1919.6	1595.9	1429.3	1285.3	1032.9	832.9	627.7	420.4	320.1
22.5°	2780.8	2305.9	1885.4	1537.0	1363.9	1218.4	963.1	752.9	520.1	380.4	333.9
25°	2787.4	2276.0	1837.4	1472.3	1299.1	1154.4	892.5	661.9	451.7	391.3	373.9
27.5°	2737.2	2206.2	1747.2	1379.2	1208.2	1058.4	787.0	525.9	424.1	389.9	401.5
30°	2588.8	2046.9	1587.9	1215.5	1050.4	900.5	562.3	412.4	352.1	354.2	357.2
32.5°	2327.7	1782.1	1331.9	976.2	795.8	593.6	349.9	275.7	267.7	267.7	266.2
35°	1979.3	1458.4	1045.3	617.6	395.7	285.1	181.1	181.8	178.2	177.5	176.8
37.5°	1619.2	1150.7	661.9	255.3	171.7	119.3	106.9	108.4	106.9	109.1	107.7
40°	1276.6	710.7	241.5	81.5	60.4	58.2	59.6	61.1	61.1	62.6	62.6
42.5°	741.9	235.7	63.3	32.7	32.7	31.3	32.0	33.5	34.2	34.9	34.2
45°	220.4	48.7	20.4	18.2	18.2	17.5	17.5	18.2	18.9	19.6	19.6
47.5°	34.9	13.8	11.6	10.2	10.2	10.2	10.2	10.2	10.9	10.9	11.6
50°	10.9	8.7	7.3	6.5	6.5	5.8	5.8	6.5	6.5	6.5	7.3
52.5°	6.5	5.1	5.1	4.4	5.1	5.1	4.4	5.1	5.1	5.1	5.8
55°	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	5.1	5.1	5.1
57.5°	3.6	3.6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
60°	3.6	3.6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	5.1
62.5°	3.6	3.6	4.4	4.4	4.4	4.4	4.4	4.4	5.1	5.1	5.1
65°	3.6	3.6	4.4	4.4	4.4	4.4	4.4	5.1	5.1	5.1	5.1
67.5°	3.6	4.4	4.4	4.4	4.4	5.1	5.1	5.1	5.1	5.1	5.1
70°	3.6	4.4	4.4	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
72.5°	3.6	4.4	4.4	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
75°	4.4	4.4	4.4	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.8
77.5°	4.4	4.4	5.1	5.1	5.1	5.1	5.1	5.1	5.8	5.8	5.8
80°	4.4	4.4	5.1	5.1	5.1	5.1	5.1	5.8	5.8	5.8	5.8
82.5°	4.4	4.4	5.1	5.1	5.1	5.1	5.1	5.8	5.8	5.8	5.8
85°	4.4	4.4	5.1	5.1	5.1	5.1	5.1	5.8	5.8	5.8	5.8
87.5°	4.4	4.4	5.1	5.1	5.1	5.1	5.1	5.8	5.8	5.8	5.8
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°	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6
2.5°	953.6	920.2	904.2	881.6	865.6	830.0	815.4	790.7	770.3	736.9	739.0
5°	870.7	807.4	764.5	731.0	707.8	651.0	613.2	573.2	536.8	491.7	475.0
7.5°	755.8	677.9	612.5	572.5	542.6	467.0	383.3	317.9	268.4	232.8	218.9
10°	640.8	539.7	435.7	373.9	331.0	258.2	221.1	203.7	187.7	168.0	154.9
12.5°	507.0	363.0	268.4	243.7	226.2	202.2	178.2	159.3	162.9	163.7	168.8
15°	346.2	261.1	231.3	214.6	195.7	181.8	189.9	194.9	204.4	205.1	211.7
17.5°	281.5	245.1	221.1	220.4	221.9	229.9	242.2	248.8	261.1	264.0	273.5
20°	281.5	260.4	280.8	280.8	284.4	295.3	311.3	320.8	334.6	339.7	351.3
22.5°	320.8	335.3	360.8	363.7	365.2	376.8	397.2	406.6	422.6	425.5	437.9
25°	391.3	404.4	427.7	429.9	430.6	439.3	454.6	459.7	470.6	464.8	472.1
27.5°	413.9	419.7	434.3	435.7	432.1	435.7	441.5	441.5	445.2	433.5	435.7
30°	363.7	365.2	372.4	373.2	365.2	366.6	367.3	366.6	365.9	353.5	353.5
32.5°	269.9	269.9	279.3	277.1	268.4	270.6	270.6	270.6	269.9	259.7	258.2
35°	178.9	179.7	187.7	186.2	179.7	181.1	181.1	183.3	181.1	175.3	173.8
37.5°	109.1	109.8	113.5	114.2	112.0	112.7	113.5	112.7	114.2	111.3	109.8
40°	63.3	64.7	67.6	68.4	67.6	67.6	68.4	69.1	72.0	68.4	66.9
42.5°	37.1	37.8	39.3	39.3	39.3	39.3	40.0	40.7	41.5	40.7	40.0
45°	21.1	21.8	22.5	22.5	23.3	22.5	23.3	23.3	24.0	23.3	23.3
47.5°	12.4	12.4	13.1	13.1	13.8	13.1	13.8	13.8	13.8	13.1	13.1
50°	7.3	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.3	7.3
52.5°	5.8	5.8	5.8	5.8	5.8	5.1	5.1	5.1	5.1	4.4	4.4
55°	5.1	5.1	5.1	5.1	5.1	5.1	4.4	3.6	3.6	2.9	2.9
57.5°	4.4	5.1	5.1	5.1	5.1	4.4	4.4	3.6	2.9	2.2	2.2
60°	5.1	5.1	5.1	5.1	4.4	4.4	4.4	3.6	2.9	2.2	2.2
62.5°	5.1	5.1	5.1	5.1	5.1	4.4	4.4	3.6	2.9	2.2	2.2
65°	5.1	5.1	5.1	5.1	5.1	4.4	4.4	3.6	2.9	2.2	2.2
67.5°	5.1	5.1	5.1	5.1	5.1	4.4	4.4	3.6	2.9	2.9	2.2
70°	5.1	5.8	5.8	5.1	5.1	5.1	4.4	3.6	3.6	2.9	2.2
72.5°	5.1	5.8	5.8	5.1	5.1	5.1	4.4	3.6	3.6	2.9	2.2
75°	5.8	5.8	5.8	5.8	5.1	5.1	4.4	4.4	3.6	2.9	2.2
77.5°	5.8	5.8	5.8	5.8	5.1	5.1	4.4	4.4	3.6	2.9	2.2
80°	5.8	5.8	5.8	5.8	5.8	5.1	5.1	4.4	3.6	2.9	2.9
82.5°	5.8	5.8	5.8	5.8	5.8	5.1	5.1	4.4	3.6	2.9	2.9
85°	5.8	5.8	5.8	5.8	5.8	5.1	5.1	4.4	3.6	2.9	2.2
87.5°	5.8	5.8	5.8	5.8	5.1	5.1	4.4	4.4	3.6	2.9	2.2
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: P209010

CATALOG NUMBER: LDSQA6A45935D010TE LARH20SP 6LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6	1033.6
2.5°	712.1	695.4	688.1	699.8	693.9	676.5	680.1	669.2
5°	424.8	399.3	383.3	390.6	367.3	346.2	346.2	331.0
7.5°	205.1	197.1	192.8	194.2	189.1	182.6	178.9	178.9
10°	144.0	141.1	141.8	141.8	146.2	145.5	147.7	146.9
12.5°	170.9	172.4	173.1	176.0	179.7	179.7	181.8	180.4
15°	218.9	217.5	221.9	222.6	228.4	229.1	232.0	229.1
17.5°	278.6	281.5	285.9	285.1	296.8	297.5	297.5	296.8
20°	358.6	360.8	365.2	366.6	380.4	381.9	387.0	387.7
22.5°	445.9	445.9	448.1	451.0	464.1	464.8	467.0	467.0
25°	475.7	471.4	472.1	475.7	483.0	480.1	482.3	480.8
27.5°	437.2	430.6	429.2	434.3	439.3	431.3	434.3	434.3
30°	355.0	349.2	347.7	352.8	356.4	347.7	350.6	352.1
32.5°	259.7	256.0	255.3	259.0	261.9	254.6	257.5	259.7
35°	175.3	173.8	172.4	173.1	177.5	171.7	174.6	176.0
37.5°	111.3	108.4	109.1	110.6	113.5	109.8	112.7	112.7
40°	68.4	66.9	66.9	68.4	69.8	66.9	68.4	69.1
42.5°	40.0	40.0	40.0	40.7	41.5	40.0	40.0	40.7
45°	23.3	22.5	22.5	23.3	24.0	22.5	23.3	23.3
47.5°	13.1	12.4	12.4	13.1	13.1	12.4	13.1	13.1
50°	7.3	6.5	6.5	7.3	7.3	6.5	6.5	6.5
52.5°	3.6	3.6	3.6	3.6	3.6	3.6	2.9	2.9
55°	2.2	2.2	1.5	1.5	1.5	1.5	1.5	0.7
57.5°	1.5	1.5	0.7	0.7	0.7	0.7	0.0	0.0
60°	1.5	1.5	0.7	0.7	0.7	0.0	0.0	0.0
62.5°	1.5	1.5	0.7	0.7	0.7	0.0	0.0	0.0
65°	1.5	1.5	0.7	0.7	0.7	0.0	0.0	0.0
67.5°	1.5	1.5	0.7	0.7	0.7	0.0	0.0	0.0
70°	2.2	1.5	1.5	0.7	0.7	0.7	0.0	0.0
72.5°	2.2	1.5	1.5	1.5	0.7	0.7	0.0	0.0
75°	2.2	1.5	1.5	1.5	0.7	0.7	0.0	0.0
77.5°	2.2	1.5	1.5	1.5	0.7	0.7	0.7	0.0
80°	2.2	1.5	1.5	1.5	0.7	0.7	0.7	0.7
82.5°	2.2	1.5	1.5	1.5	0.7	0.7	0.7	0.7
85°	2.2	1.5	1.5	1.5	0.7	0.7	0.7	0.0
87.5°	2.2	1.5	1.5	1.5	0.7	0.7	0.7	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)