

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: NEO-RAY

Report Number: P242994

Luminaire Tested: **S121DR-H685D930-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242994
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-57)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121DR-H685D930-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2191.5 lumens
Efficiency: N/A
Efficacy: 92.9 lumens/watt
Spacing Criteria (0/90/45): 1.13 / 1.2 / 1.28
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

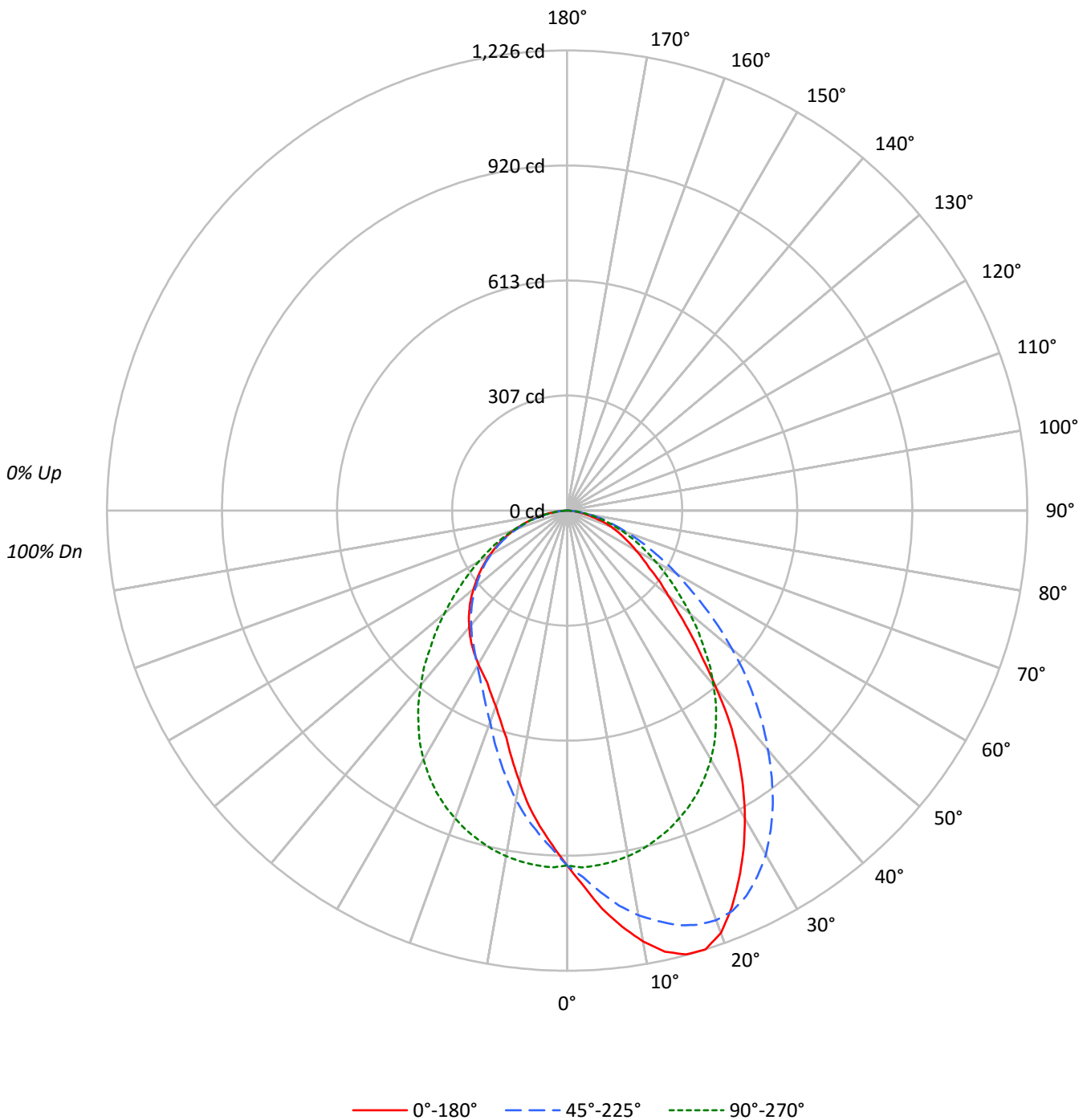
Input Watts (W): 23.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P242994

CATALOG NUMBER: S121DR-H685D930-X4F0-XX-UDD-A-W

Luminous Intensity Polar Plot





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CATALOG NUMBER: S121DR-H685D930-X4F0-XX-UDD-A-W

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	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88	86					86			
2	101	93	87	81	98	91	85	80	88	83	79	84	80	77	81	78	75	73					73			
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65	63					63			
4	85	74	66	59	83	72	65	59	70	63	58	68	62	57	66	61	57	54					54			
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50	48					48			
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44	42					42			
7	68	55	46	41	66	54	46	40	53	45	40	51	45	40	50	44	40	38					38			
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36	34					34			
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33	31					31			
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30	28					28			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	28015	28015	28015
5°	31655	28214	25067
10°	35066	28128	22036
15°	37552	27884	19218
20°	37759	27520	17500
25°	35416	27004	16500
30°	32400	26190	16176
35°	28695	24991	15970
40°	23911	23439	15696
45°	19489	21563	15408
50°	16180	19651	15018
55°	13844	17817	14629
60°	12539	16130	14163
65°	11582	14681	13664
70°	10682	13220	12865
75°	8632	11723	11849
80°	6876	9487	10135
85°	5167	7003	8295



TEST NUMBER: P242994

CATALOG NUMBER: S121DR-H685D930-X4F0-XX-UDD-A-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	90.3	4.1
10°-20°	258.8	11.8
20°-30°	376.8	17.2
30°-40°	420.1	19.2
40°-50°	388.4	17.7
50°-60°	309.4	14.1
60°-70°	211.8	9.7
70°-80°	109.9	5.0
80°-90°	26.0	1.2
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°	725.9	33.1
0°-40°	1146.0	52.3
0°-60°	1843.7	84.1
0°-90°	2191.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2191.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	946	946	946	946	946	
5°	1064	1020	949	864	843	104
15°	1224	1144	909	690	626	343
25°	1083	1132	826	531	505	496
35°	793	955	691	435	442	492
45°	465	704	515	359	368	362
55°	268	445	345	276	283	245
65°	165	246	209	190	195	164
75°	75	110	102	97	104	83
85°	15	21	21	22	24	19
90°	0	0	0	0	0	



TEST NUMBER: P242994

CATALOG NUMBER: S121DR-H685D930-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5
2.5°	1000.3	1000.3	997.7	998.8	997.3	994.6	990.4	985.9	980.2	977.9	976.7
5°	1064.3	1065.8	1063.9	1060.1	1059.3	1056.3	1047.2	1041.8	1029.6	1020.1	1017.1
7.5°	1117.6	1120.2	1120.2	1113.4	1110.3	1102.7	1096.3	1087.5	1072.3	1061.6	1052.9
10°	1165.5	1166.7	1162.5	1158.7	1152.6	1146.5	1135.5	1124.4	1108.1	1095.1	1080.7
12.5°	1203.6	1205.9	1202.8	1196.8	1189.5	1181.5	1167.8	1153.7	1137.8	1120.2	1104.6
15°	1224.2	1227.6	1228.0	1223.0	1217.7	1208.2	1198.3	1183.0	1165.5	1143.8	1118.3
17.5°	1225.7	1227.2	1228.3	1224.5	1221.1	1217.7	1207.8	1195.2	1178.5	1157.2	1133.6
20°	1197.5	1200.9	1204.7	1201.3	1202.8	1202.8	1198.7	1192.2	1178.5	1161.4	1138.5
22.5°	1145.0	1153.0	1157.9	1161.4	1164.8	1169.7	1174.7	1171.6	1166.3	1153.7	1133.2
25°	1083.3	1089.8	1099.3	1102.4	1105.0	1119.5	1128.2	1134.3	1134.3	1131.7	1118.0
27.5°	1017.8	1022.0	1030.0	1040.7	1050.6	1059.3	1077.6	1089.0	1098.2	1098.2	1090.9
30°	947.0	953.1	962.7	969.9	982.1	1000.0	1015.2	1028.9	1049.8	1059.0	1057.4
32.5°	872.4	878.5	888.4	894.5	912.0	926.5	950.1	971.4	995.4	1009.1	1017.5
35°	793.3	793.6	810.4	820.3	835.5	853.4	882.3	906.3	932.6	955.4	973.3
37.5°	711.8	711.4	723.2	740.7	752.9	778.0	807.7	834.4	870.9	895.3	923.4
40°	618.2	626.2	636.1	652.0	673.0	702.7	730.8	765.5	802.0	832.5	862.5
42.5°	534.4	540.9	556.9	574.8	597.2	622.4	656.6	695.1	730.8	770.4	803.9
45°	465.1	468.6	478.1	492.6	516.2	544.7	580.5	621.2	663.5	703.8	741.1
47.5°	401.2	411.5	416.4	429.7	446.9	473.5	510.8	547.4	596.1	641.0	681.7
50°	351.0	352.9	361.6	371.5	391.7	411.5	439.6	477.3	522.6	573.3	614.7
52.5°	309.8	309.1	316.3	325.1	339.2	360.1	384.5	421.0	459.4	509.7	555.0
55°	268.0	271.8	275.2	284.0	296.5	312.5	333.1	363.9	400.1	444.6	492.2
57.5°	239.0	239.4	241.3	248.6	256.9	269.5	289.3	315.6	347.9	386.7	432.8
60°	211.6	212.0	215.4	217.7	223.4	234.1	249.3	271.0	299.6	336.9	377.2
62.5°	188.0	188.4	190.3	192.6	197.9	202.1	215.1	233.7	256.9	290.1	324.7
65°	165.2	165.6	165.6	168.6	172.1	175.9	185.0	196.8	219.3	245.5	276.3
67.5°	143.1	145.4	144.6	146.9	150.0	151.9	158.3	169.0	184.2	206.3	233.0
70°	123.3	122.9	124.1	125.2	126.4	129.4	133.6	140.8	153.8	169.4	193.0
72.5°	102.0	99.7	101.3	102.8	104.7	107.0	110.4	115.7	125.6	138.2	155.7
75°	75.4	74.2	76.5	76.9	80.3	83.4	87.2	92.5	99.7	110.4	121.8
77.5°	54.8	56.3	57.1	57.9	58.2	61.7	65.9	70.4	74.6	84.5	93.3
80°	40.3	40.3	40.7	41.5	42.3	43.0	45.7	48.7	52.1	58.2	67.0
82.5°	28.2	27.8	27.8	28.2	28.5	29.3	30.5	31.6	34.6	37.7	42.3
85°	15.2	15.6	16.0	15.2	15.6	16.0	16.7	17.9	18.7	20.9	22.8
87.5°	5.3	6.5	6.1	6.1	6.5	6.5	6.5	7.2	7.2	7.2	8.4
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: P242994

CATALOG NUMBER: S121DR-H685D930-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5
2.5°	975.6	974.5	971.4	965.3	961.1	953.5	952.0	951.6	944.8	934.5	933.7
5°	1011.8	1003.0	995.8	985.1	974.5	961.5	953.9	948.6	936.4	921.2	914.3
7.5°	1044.9	1032.3	1017.5	1000.7	985.1	966.8	953.5	942.9	925.0	905.6	893.8
10°	1071.5	1055.9	1037.3	1014.8	993.5	969.5	950.9	934.9	911.3	887.3	871.3
12.5°	1089.8	1072.3	1051.0	1024.7	998.8	971.4	944.4	924.2	894.5	866.7	846.2
15°	1110.3	1081.4	1059.3	1029.6	999.2	966.5	937.9	909.0	874.7	843.5	816.9
17.5°	1115.3	1088.6	1062.4	1029.6	998.1	958.1	925.0	893.0	854.9	816.5	790.6
20°	1119.9	1089.4	1057.1	1021.7	988.5	947.4	910.1	872.8	828.7	787.2	754.8
22.5°	1116.4	1086.7	1050.6	1010.6	974.8	932.6	892.2	851.1	801.6	758.2	721.7
25°	1106.5	1079.1	1041.8	998.1	955.0	912.0	869.8	826.0	772.3	722.1	681.7
27.5°	1086.4	1062.0	1026.2	979.8	934.5	886.9	842.8	797.1	739.6	688.2	645.2
30°	1059.3	1039.9	1003.8	957.3	908.2	857.2	811.9	765.5	705.7	649.8	604.1
32.5°	1022.0	1008.3	977.1	931.8	878.9	824.9	778.4	731.2	667.3	614.0	567.5
35°	980.2	973.7	945.9	900.6	845.8	789.1	739.2	690.9	631.9	575.5	531.0
37.5°	931.1	935.6	910.5	865.6	808.9	751.0	698.5	651.7	591.9	537.9	494.1
40°	882.3	889.2	870.2	828.3	769.3	709.5	656.2	606.0	550.4	502.8	459.4
42.5°	828.3	842.0	827.1	786.4	728.9	665.7	610.2	563.4	510.4	466.7	428.6
45°	770.8	788.3	782.2	740.7	684.0	622.0	563.4	514.6	472.0	433.2	398.5
47.5°	712.6	732.7	730.1	695.4	641.0	577.4	519.6	471.6	432.4	401.2	372.3
50°	652.8	673.4	673.7	642.9	592.3	531.8	469.7	426.3	395.1	367.7	344.1
52.5°	594.6	615.1	615.5	591.5	540.9	481.9	424.8	385.2	358.6	337.3	317.5
55°	533.7	557.6	559.9	536.7	491.8	435.1	382.5	344.9	321.3	307.6	290.4
57.5°	472.0	497.9	502.5	483.8	440.4	387.5	343.3	307.2	288.1	278.6	265.7
60°	414.5	440.0	447.3	425.9	390.2	344.9	302.6	272.2	256.9	249.3	240.2
62.5°	361.6	387.1	390.9	372.7	337.3	299.2	267.2	239.4	226.9	221.2	213.9
65°	309.8	332.7	337.6	321.3	289.3	257.7	229.5	209.4	198.3	193.4	188.8
67.5°	262.3	283.6	287.0	272.2	245.5	218.5	197.9	180.4	172.8	166.3	164.4
70°	217.3	236.8	239.8	225.0	204.0	181.9	164.8	152.6	145.4	141.6	138.9
72.5°	175.9	191.1	193.7	184.6	168.2	148.8	135.5	125.2	120.7	117.2	116.1
75°	137.4	152.3	152.6	144.6	131.3	118.0	107.7	102.4	97.1	93.6	92.9
77.5°	105.4	113.8	115.0	110.8	97.8	89.5	81.5	77.7	75.7	72.3	72.3
80°	75.4	80.3	82.2	76.1	70.0	62.8	58.6	55.6	54.1	51.8	51.8
82.5°	46.8	51.0	53.3	48.7	45.7	41.9	38.8	36.9	35.8	34.6	34.3
85°	25.5	28.5	28.5	27.0	24.4	22.5	21.3	20.6	20.2	19.8	19.4
87.5°	9.1	11.4	10.3	10.7	9.5	9.1	8.8	8.8	9.1	8.4	8.4
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: P242994

CATALOG NUMBER: S121DR-H685D930-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5	945.5
2.5°	928.8	926.9	921.2	915.8	911.6	902.5	900.6	901.4	901.4	901.8	897.6
5°	906.3	898.3	889.2	880.8	874.3	864.1	858.4	856.8	855.7	853.4	849.2
7.5°	880.8	871.7	858.7	851.1	837.4	826.0	818.0	812.7	809.3	804.3	797.5
10°	854.9	841.6	827.1	811.9	798.2	783.0	770.4	764.3	757.1	752.2	744.5
12.5°	829.0	810.4	790.6	773.1	754.4	736.6	723.6	715.2	702.3	695.1	687.1
15°	795.2	772.3	755.6	725.1	716.0	690.1	674.5	668.0	655.5	653.2	640.6
17.5°	763.2	736.9	712.2	686.7	662.3	644.4	631.1	622.7	612.8	606.7	598.4
20°	723.2	695.8	666.1	639.5	618.9	599.9	591.5	580.9	575.2	569.1	563.0
22.5°	685.2	651.7	622.0	600.3	579.3	563.7	554.6	547.4	542.4	536.3	532.1
25°	644.4	613.2	585.8	563.4	543.2	531.0	523.4	519.2	516.2	511.6	508.9
27.5°	605.6	574.0	547.0	529.9	513.5	502.8	499.0	495.2	491.4	489.9	489.5
30°	564.1	535.2	513.1	498.3	483.4	477.7	475.8	472.0	472.8	473.1	472.0
32.5°	529.1	500.9	484.2	471.6	460.2	456.0	455.6	454.1	454.5	456.4	455.6
35°	492.9	472.0	455.3	445.0	437.7	434.7	435.1	435.5	437.7	438.1	439.6
37.5°	462.1	441.9	430.9	421.0	417.6	417.6	417.9	418.3	420.2	422.5	423.3
40°	431.7	415.3	405.8	399.3	397.4	397.4	398.9	400.8	402.0	404.2	404.6
42.5°	404.2	390.5	383.3	376.8	377.6	379.5	379.9	381.0	384.1	384.5	385.2
45°	377.2	366.9	359.7	357.8	357.8	359.3	361.2	362.0	364.3	364.7	365.4
47.5°	354.0	343.3	338.0	336.1	337.3	339.2	341.8	343.0	344.9	344.5	346.4
50°	328.1	319.4	315.2	314.4	315.2	318.6	319.7	322.4	324.3	325.5	326.2
52.5°	303.4	296.5	294.6	294.2	295.8	298.0	299.6	302.2	304.5	304.5	304.1
55°	279.8	273.7	271.4	273.3	275.2	276.3	279.4	280.9	283.2	283.6	283.2
57.5°	255.8	250.5	249.7	250.5	254.3	256.6	258.5	258.5	259.6	260.0	261.1
60°	231.1	227.6	226.9	228.8	233.0	234.5	235.6	236.0	237.5	236.8	239.0
62.5°	207.8	204.4	205.9	207.8	209.4	211.6	212.4	214.3	213.9	214.7	215.8
65°	183.9	181.9	182.3	184.6	186.5	189.6	189.6	189.6	191.5	191.5	192.2
67.5°	160.6	159.5	161.0	162.9	163.3	165.2	164.8	167.1	168.6	169.4	170.1
70°	138.2	137.4	137.4	139.3	141.2	142.0	142.7	144.3	144.6	145.8	147.7
72.5°	116.9	114.6	115.0	117.6	117.6	119.1	121.0	121.0	123.3	123.7	125.6
75°	93.6	92.9	93.6	95.2	97.1	96.7	99.0	98.6	99.3	102.0	102.4
77.5°	73.1	71.9	73.8	74.6	75.0	75.4	76.1	78.0	79.6	80.7	81.1
80°	52.5	52.1	54.1	54.8	54.4	55.2	56.3	58.2	58.2	59.0	60.1
82.5°	35.4	34.6	35.8	36.9	37.7	38.1	38.1	38.8	39.2	40.0	40.0
85°	20.2	20.2	20.9	21.3	22.1	21.7	22.5	22.1	22.8	23.6	23.2
87.5°	8.8	8.8	8.8	8.8	9.1	9.1	9.5	9.5	9.1	9.5	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: P242994

CATALOG NUMBER: S121DR-H685D930-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	945.5	945.5	945.5	945.5
2.5°	896.0	896.8	894.9	893.0
5°	848.8	846.2	843.5	842.8
7.5°	795.9	795.9	789.5	791.0
10°	739.2	736.9	732.0	732.4
12.5°	684.0	682.1	679.5	678.3
15°	634.2	635.3	637.2	626.5
17.5°	594.9	591.9	590.4	588.5
20°	559.9	558.4	555.4	555.0
22.5°	532.9	529.5	528.7	529.1
25°	507.0	507.0	507.0	504.7
27.5°	488.7	488.7	487.6	488.0
30°	472.8	473.5	472.4	472.8
32.5°	457.5	457.9	457.2	456.8
35°	440.4	441.5	441.2	441.5
37.5°	424.0	424.8	424.0	424.0
40°	405.4	407.3	406.9	405.8
42.5°	386.7	386.7	387.9	387.5
45°	367.3	366.6	366.6	367.7
47.5°	346.8	348.3	347.5	347.9
50°	327.7	327.4	326.2	325.8
52.5°	305.3	306.0	305.7	303.8
55°	283.6	283.6	283.2	283.2
57.5°	260.4	261.5	261.1	261.1
60°	238.3	239.0	239.4	239.0
62.5°	215.8	216.2	215.8	216.2
65°	194.1	194.1	193.7	194.9
67.5°	170.5	170.9	170.5	171.3
70°	148.1	148.8	149.2	148.5
72.5°	126.8	126.0	126.4	125.6
75°	103.2	103.5	103.2	103.5
77.5°	81.1	81.5	81.1	81.5
80°	59.8	59.8	60.1	59.4
82.5°	40.3	40.3	41.5	40.3
85°	23.6	23.6	22.8	24.4
87.5°	9.1	9.1	9.1	9.1
90°	0.0	0.0	0.0	0.0

(END OF REPORT)