

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: P243097

Luminaire Tested: **S121RDR-H685D930-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243097
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-67)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121RDR-H685D930-X4F0-XX-UDD-A-W
Description: DEFINE 1 REGRESSED 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: 1779.6 lumens
Efficiency: N/A
Efficacy: 75.4 lumens/watt
Spacing Criteria (0/90/45): 0.89 / 1.21 / 1.07
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

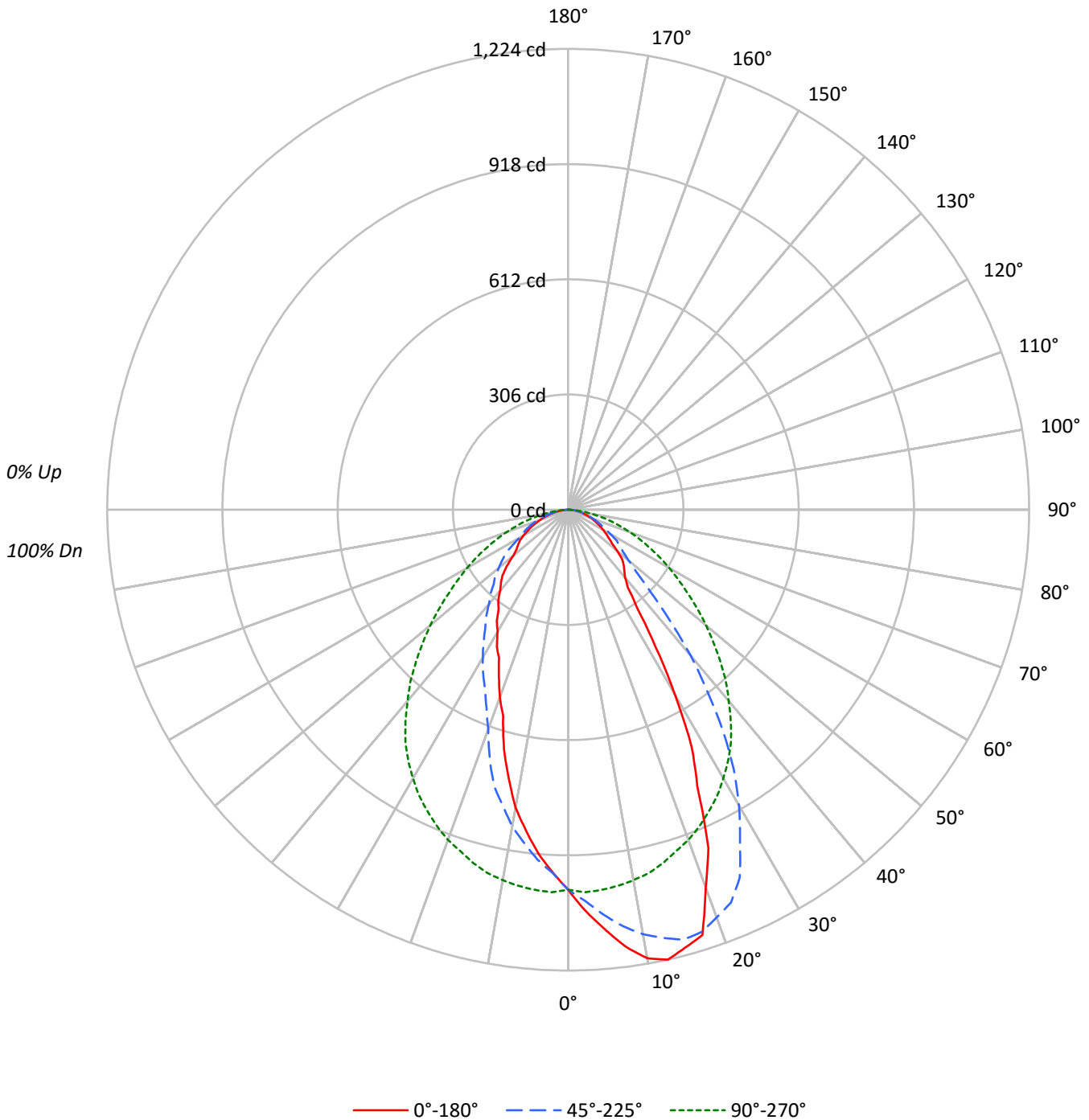
Input Watts (W): 23.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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				100
1	111	107	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89				87	
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78				76	
3	94	85	78	73	92	84	77	72	81	75	71	78	73	70	76	72	68				66	
4	87	77	69	63	85	76	69	63	73	67	62	71	66	61	69	64	61				59	
5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54				52	
6	76	64	56	50	74	63	55	50	61	55	50	60	54	49	58	53	49				47	
7	71	59	51	45	69	58	50	45	56	50	45	55	49	44	54	48	44				42	
8	66	54	46	41	65	53	46	41	52	46	41	51	45	41	50	44	40				39	
9	62	50	43	38	61	50	42	38	49	42	37	48	42	37	47	41	37				35	
10	59	47	39	35	58	46	39	35	45	39	34	44	38	34	44	38	34				33	

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	29908	29908	29908
5°	33285	30147	27239
10°	36396	30063	24187
15°	36920	29810	20199
20°	33653	29428	16705
25°	26507	28894	14212
30°	19378	28195	12813
35°	11564	27262	11647
40°	9070	25648	10865
45°	8741	23939	10337
50°	7790	22020	8772
55°	6803	20038	8379
60°	6359	18341	8119
65°	5924	16679	7523
70°	5605	15039	6861
75°	5140	13383	6102
80°	4675	10852	5324
85°	4386	8295	3876



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	96.4	5.4
10°-20°	268.8	15.1
20°-30°	357.4	20.1
30°-40°	341.0	19.2
40°-50°	283.0	15.9
50°-60°	210.4	11.8
60°-70°	136.3	7.7
70°-80°	69.4	3.9
80°-90°	17.0	1.0
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°	722.6	40.6
0°-40°	1063.6	59.8
0°-60°	1557.0	87.5
0°-90°	1779.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1779.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1009	1009	1009	1009	1009	
5°	1119	1080	1014	933	916	110
15°	1204	1182	972	760	658	335
25°	811	1078	884	523	435	376
35°	320	716	754	384	322	218
45°	209	309	571	280	247	159
55°	132	167	388	202	162	120
65°	84	96	238	122	107	84
75°	45	49	117	60	53	48
85°	13	13	24	13	11	14
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4
2.5°	1067.3	1064.6	1067.7	1066.5	1061.6	1062.7	1056.6	1052.8	1043.7	1040.3	1040.3
5°	1119.1	1122.9	1120.6	1121.4	1116.4	1113.4	1106.9	1099.7	1088.2	1079.9	1076.8
7.5°	1170.8	1172.0	1173.1	1170.1	1164.4	1159.0	1149.9	1139.2	1126.7	1116.0	1107.7
10°	1209.7	1212.3	1210.8	1206.2	1202.1	1194.1	1184.2	1172.7	1159.0	1145.0	1134.7
12.5°	1224.1	1226.4	1229.8	1227.2	1226.8	1223.0	1213.1	1199.0	1182.3	1164.7	1152.9
15°	1203.6	1202.1	1211.2	1208.9	1208.1	1206.6	1209.3	1206.2	1197.5	1182.3	1167.8
17.5°	1184.5	1183.8	1192.9	1195.2	1191.8	1186.8	1183.8	1180.0	1175.8	1176.2	1174.3
20°	1067.3	1090.5	1095.1	1107.3	1133.2	1150.3	1167.4	1166.7	1154.5	1152.6	1151.8
22.5°	972.9	981.7	977.5	997.3	1011.4	1042.2	1072.3	1110.3	1135.8	1129.3	1125.2
25°	810.8	838.2	850.7	875.5	911.2	950.5	967.6	1007.9	1047.1	1077.6	1100.8
27.5°	710.3	716.4	724.4	749.9	763.2	799.0	862.9	917.7	954.3	987.4	1048.7
30°	566.4	569.1	596.8	610.9	650.1	685.1	740.7	784.9	858.3	907.4	954.6
32.5°	432.4	430.1	460.6	476.9	515.8	563.0	625.0	666.1	738.1	818.4	874.7
35°	319.7	319.4	335.7	347.1	389.8	425.9	504.7	558.4	637.2	716.0	788.7
37.5°	260.4	260.0	263.4	273.3	291.2	331.9	370.0	449.5	526.4	604.1	695.0
40°	234.5	236.4	237.1	241.7	247.8	260.0	283.2	338.8	414.1	506.6	598.0
42.5°	220.8	220.8	221.5	222.7	225.7	229.1	243.2	264.5	325.1	398.9	501.3
45°	208.6	209.0	209.7	210.5	209.7	211.6	218.1	226.9	250.5	308.7	407.7
47.5°	194.1	193.7	195.6	196.8	198.3	200.6	201.0	205.5	215.8	246.3	318.2
50°	169.0	169.4	171.3	175.9	180.8	185.0	187.7	190.7	194.1	208.6	246.7
52.5°	146.2	146.5	147.7	151.1	155.7	161.0	169.4	176.2	178.9	183.5	204.8
55°	131.7	131.7	133.2	135.1	136.3	140.1	145.8	153.4	163.3	167.1	176.2
57.5°	119.5	119.5	120.3	120.3	121.8	123.7	127.5	131.3	139.7	151.9	157.6
60°	107.3	107.3	108.1	108.1	110.0	110.8	113.4	115.7	120.3	128.7	140.1
62.5°	95.9	95.2	95.9	96.3	97.4	98.6	100.5	103.2	105.8	110.8	119.1
65°	84.5	84.1	84.9	85.6	86.4	87.9	89.1	91.0	93.3	95.9	100.1
67.5°	74.6	74.2	74.6	75.7	75.4	76.1	78.0	78.8	81.1	83.7	87.2
70°	64.7	63.9	64.7	64.7	65.1	66.2	66.2	68.1	70.0	71.6	74.6
72.5°	54.1	54.4	54.1	54.4	55.2	55.6	56.3	57.5	58.6	60.1	62.0
75°	44.9	44.9	45.3	45.7	46.4	46.4	46.8	47.6	48.3	49.1	51.4
77.5°	35.8	36.2	36.5	36.9	36.9	37.3	37.7	38.1	39.2	39.6	40.7
80°	27.4	27.8	27.8	27.8	28.5	27.8	28.5	29.3	29.3	29.7	30.5
82.5°	19.8	20.2	19.8	20.2	20.6	20.6	20.2	20.6	20.6	21.3	21.3
85°	12.9	12.2	12.2	12.2	12.2	12.2	12.6	12.9	12.6	12.6	12.9
87.5°	5.3	5.3	5.3	5.3	5.7	5.3	5.7	5.7	5.7	5.3	5.7
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4
2.5°	1042.2	1039.1	1036.5	1031.9	1026.2	1017.8	1016.7	1017.1	1006.8	996.9	995.4
5°	1070.4	1065.4	1057.0	1047.1	1038.0	1023.9	1017.8	1013.6	998.0	984.7	979.4
7.5°	1100.4	1088.6	1077.2	1061.6	1046.4	1028.1	1016.7	1007.9	987.4	969.9	960.7
10°	1124.0	1109.6	1093.2	1073.4	1052.5	1030.0	1012.9	999.2	974.4	952.7	941.3
12.5°	1140.8	1124.4	1105.0	1081.4	1057.4	1027.7	1006.8	988.5	958.4	932.6	918.9
15°	1149.5	1132.0	1108.0	1082.2	1057.4	1026.2	998.4	971.8	942.1	909.7	892.6
17.5°	1157.5	1134.7	1107.7	1078.0	1052.8	1020.1	985.8	951.2	917.7	887.3	859.5
20°	1151.8	1132.4	1102.3	1071.5	1043.3	1005.3	969.1	933.3	891.5	856.1	828.3
22.5°	1125.2	1121.7	1089.4	1056.3	1023.9	987.4	945.5	910.1	865.2	823.3	789.8
25°	1094.0	1089.8	1072.3	1036.9	1000.3	962.2	924.6	883.8	832.1	788.7	750.2
27.5°	1067.7	1058.2	1045.6	1012.5	973.3	935.2	896.4	856.8	801.6	753.3	709.5
30°	1014.4	1023.5	1009.4	986.6	941.3	904.4	867.1	824.1	769.3	713.7	668.8
32.5°	929.9	985.1	971.0	952.7	908.2	867.9	832.5	790.2	729.7	674.9	628.4
35°	855.3	902.9	934.8	912.8	873.6	826.7	790.6	753.7	690.5	634.5	590.0
37.5°	783.0	833.6	886.9	866.7	834.4	784.1	746.0	709.5	650.9	594.6	550.0
40°	688.2	762.0	813.4	821.4	788.3	737.7	700.8	663.1	611.3	555.3	507.8
42.5°	597.2	692.0	733.5	774.6	740.7	693.1	652.0	620.1	570.2	521.1	469.3
45°	502.1	609.8	671.1	702.7	690.5	647.1	602.2	571.3	529.5	483.8	434.7
47.5°	419.5	521.9	609.4	627.3	639.1	596.5	554.6	523.4	487.2	449.5	402.7
50°	332.7	438.9	532.5	564.9	587.3	548.5	504.7	477.7	447.2	413.4	371.9
52.5°	258.8	358.2	456.4	511.6	519.2	499.0	458.7	432.0	407.7	377.2	339.5
55°	205.5	282.4	380.6	445.0	452.2	447.2	411.1	387.9	370.0	344.5	312.9
57.5°	170.5	219.6	308.3	382.5	393.2	397.8	368.1	347.1	331.2	311.0	282.4
60°	147.3	173.2	240.9	313.6	343.0	350.9	324.7	309.5	296.1	277.9	251.2
62.5°	130.2	142.0	184.2	254.3	291.9	298.8	285.5	274.1	263.0	245.5	221.9
65°	108.5	121.0	142.0	196.4	242.8	246.3	248.9	237.9	229.1	214.7	193.7
67.5°	91.0	100.9	114.6	150.7	194.9	204.8	211.6	206.7	198.3	183.8	166.0
70°	77.3	83.0	92.9	113.0	148.8	170.1	177.4	173.6	169.4	153.8	138.6
72.5°	64.3	68.9	74.6	86.8	112.3	135.1	145.8	143.9	139.3	127.5	115.0
75°	53.3	55.2	59.8	66.6	81.5	102.8	115.3	116.9	111.5	100.5	90.6
77.5°	41.9	43.8	46.4	50.6	60.1	74.6	84.9	88.7	85.3	77.3	67.4
80°	32.0	33.1	35.0	36.9	40.7	50.6	61.3	63.6	61.7	55.2	49.1
82.5°	21.3	22.1	23.6	25.1	27.0	31.6	40.7	42.3	41.9	36.2	32.0
85°	12.9	12.9	13.3	14.5	15.2	17.1	22.1	24.4	23.2	19.4	17.5
87.5°	5.3	5.7	5.3	5.3	5.3	5.7	7.2	9.9	7.6	5.7	5.3
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4	1009.4
2.5°	991.2	989.7	983.9	978.6	972.5	965.3	965.7	966.8	964.2	963.4	966.1
5°	971.8	966.4	957.7	948.9	942.1	932.9	927.6	930.3	928.4	924.9	922.7
7.5°	951.2	943.6	931.0	920.0	910.9	893.7	889.9	885.4	881.6	873.9	872.4
10°	926.9	915.8	899.8	884.2	867.5	854.1	841.6	836.3	826.0	819.1	817.2
12.5°	901.7	883.5	865.6	842.7	823.7	804.3	793.2	785.6	775.4	758.6	750.6
15°	875.8	848.1	824.1	799.0	786.0	759.8	738.8	715.2	702.7	674.5	658.1
17.5°	841.2	809.2	776.9	756.3	729.3	692.8	657.7	645.6	626.5	608.3	590.0
20°	794.4	765.1	734.2	703.4	662.3	620.1	606.7	585.8	564.9	553.8	544.3
22.5°	751.4	719.8	683.2	642.5	600.3	567.1	549.6	534.4	521.5	511.6	500.5
25°	710.6	677.9	625.8	584.3	547.4	523.0	514.2	494.4	480.7	473.5	464.0
27.5°	665.7	620.8	578.9	535.9	503.2	489.5	469.3	453.7	439.3	425.2	421.7
30°	623.1	573.2	531.7	496.7	472.8	453.7	433.2	414.9	405.4	400.0	391.3
32.5°	580.9	530.2	491.4	464.0	438.1	417.9	398.5	389.0	374.5	362.7	355.1
35°	535.6	491.4	460.6	428.6	403.9	384.1	374.2	352.5	344.5	341.1	333.1
37.5°	495.6	456.4	425.2	400.8	373.8	357.8	338.4	333.4	322.8	313.6	311.0
40°	462.5	425.6	396.2	364.7	347.9	327.0	317.5	304.1	300.3	296.9	290.8
42.5°	426.3	394.7	361.2	339.9	315.2	305.7	290.8	287.0	277.9	274.4	272.2
45°	395.5	366.2	334.2	308.3	294.2	280.1	274.4	264.9	260.7	256.5	252.4
47.5°	365.4	335.0	309.5	285.1	269.5	263.0	252.7	245.9	241.3	237.1	232.9
50°	337.6	306.8	278.2	260.7	249.7	240.6	234.1	228.4	221.9	212.8	203.3
52.5°	307.6	279.8	256.5	239.4	229.5	220.8	215.1	205.2	192.6	182.7	178.1
55°	277.5	251.2	231.0	217.3	210.5	202.1	189.2	174.7	166.7	165.2	164.1
57.5°	252.0	227.2	208.6	197.9	189.9	175.1	161.4	156.1	153.8	153.0	152.3
60°	223.4	201.4	188.0	176.6	163.3	149.2	145.0	144.3	142.0	140.8	140.1
62.5°	197.2	178.1	166.0	152.3	138.2	135.5	132.5	130.6	129.4	126.8	125.6
65°	171.7	156.4	143.1	128.7	123.7	121.8	119.1	116.5	113.4	111.5	110.0
67.5°	147.3	132.5	118.4	113.0	110.4	107.3	103.9	100.1	98.6	95.9	95.5
70°	123.3	109.6	102.0	98.6	93.6	91.0	87.2	85.6	83.0	81.8	80.7
72.5°	100.5	90.6	87.5	82.6	79.2	75.0	73.1	71.6	70.0	68.1	68.1
75°	78.4	75.7	70.0	66.2	62.8	60.5	59.8	57.1	56.7	55.6	54.8
77.5°	62.4	57.1	55.2	51.0	48.7	47.6	46.8	45.3	43.8	43.4	43.0
80°	44.2	41.5	39.2	37.3	35.4	34.6	33.9	33.5	32.7	32.0	31.6
82.5°	28.9	27.4	25.9	24.7	24.4	23.2	22.5	22.1	21.3	21.3	21.3
85°	15.6	15.2	14.5	13.7	12.9	12.9	12.6	12.2	12.2	11.0	11.0
87.5°	4.9	4.9	4.6	4.6	3.8	4.2	3.8	3.8	3.4	3.8	3.8
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: P243097

CATALOG NUMBER: S121RDR-H685D930-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1009.4	1009.4	1009.4	1009.4
2.5°	963.0	963.0	961.5	963.0
5°	921.1	917.7	916.6	915.8
7.5°	867.9	864.8	861.8	858.7
10°	813.4	808.9	806.2	803.9
12.5°	742.6	736.9	726.3	729.3
15°	655.5	655.8	631.1	658.5
17.5°	584.3	586.2	576.3	574.8
20°	539.0	538.2	534.4	529.8
22.5°	492.5	489.1	487.6	480.4
25°	449.2	443.1	445.0	434.7
27.5°	417.6	412.6	411.1	410.3
30°	386.0	375.7	372.3	374.5
32.5°	354.0	353.2	352.1	352.5
35°	327.0	325.4	322.0	322.0
37.5°	308.3	308.7	306.8	305.3
40°	285.5	283.6	283.2	280.9
42.5°	269.1	265.3	263.8	264.2
45°	250.1	247.8	245.9	246.7
47.5°	227.6	225.3	221.2	220.0
50°	197.2	194.1	192.2	190.3
52.5°	174.3	174.0	173.2	172.8
55°	163.3	162.2	162.2	162.2
57.5°	151.9	151.1	150.7	151.5
60°	139.3	138.6	137.0	137.0
62.5°	123.7	122.9	122.6	121.0
65°	108.1	107.7	107.0	107.3
67.5°	93.6	93.3	93.3	92.1
70°	79.6	79.6	78.4	79.2
72.5°	66.6	66.2	66.2	66.2
75°	54.1	53.7	53.3	53.3
77.5°	42.6	42.6	41.9	41.9
80°	30.8	30.8	30.5	31.2
82.5°	20.6	21.3	20.6	20.6
85°	11.0	11.4	11.4	11.4
87.5°	3.4	3.0	3.0	3.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)