

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: P242139

Luminaire Tested: **S121DR-S685D935-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242139  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-18)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S121DR-S685D935-X4F0-XX-UDD-A-W  
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 3500K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2465.4 lumens  
Efficiency: N/A  
Efficacy: 93.7 lumens/watt  
Spacing Criteria (0/90/45): 1.27 / 1.22 / 1.37  
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')  
CIE Type: Direct

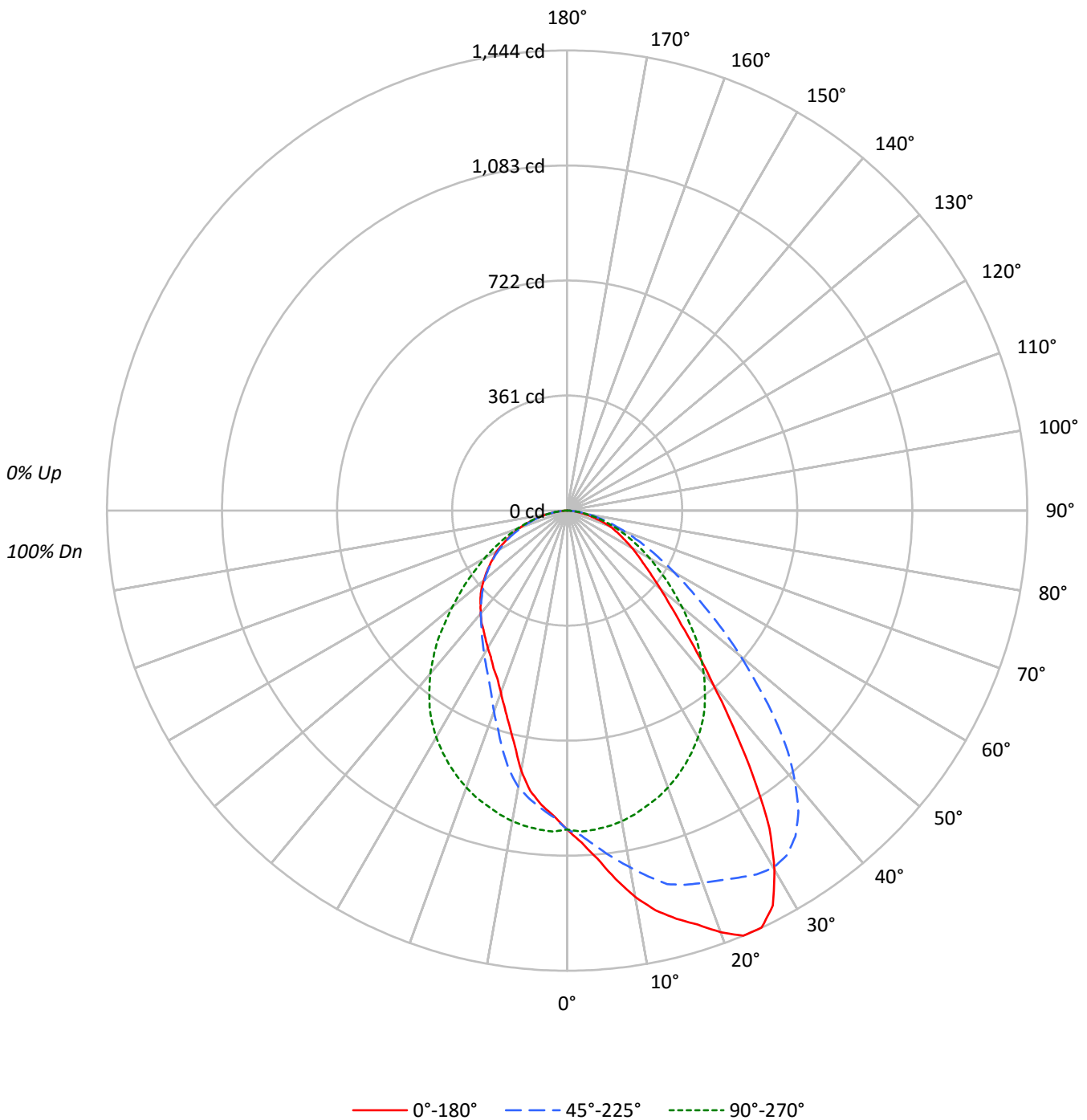
Input Watts (W): 26.3  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88	86
2	101	93	87	82	98	91	85	81	88	83	79	85	80	77	82	78	75	73
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65	63
4	85	74	66	59	83	73	65	59	70	63	58	68	62	57	66	61	57	54
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50	48
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44	42
7	68	55	46	41	66	54	46	40	52	45	40	51	45	40	50	44	40	38
8	63	50	42	36	62	50	42	36	48	41	36	47	41	36	46	40	36	34
9	59	46	38	33	58	46	38	33	44	38	33	43	37	33	42	37	32	31
10	56	43	35	30	54	42	35	30	41	34	30	40	34	30	39	34	30	28

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	29645	29645	29645
5°	32625	29886	27557
10°	37046	29777	24921
15°	40675	29448	21420
20°	44390	29157	19168
25°	47205	28698	17847
30°	44512	28103	17028
35°	36782	27219	16537
40°	27574	25810	16319
45°	21249	24065	16128
50°	17622	21651	15755
55°	15213	19661	15301
60°	13979	17730	15105
65°	12921	16027	14246
70°	12232	14398	13653
75°	10051	12719	12123
80°	7934	10357	9982
85°	6153	7615	6731



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	96.2	3.9
10°-20°	280.6	11.4
20°-30°	429.7	17.4
30°-40°	490.3	19.9
40°-50°	439.9	17.8
50°-60°	345.1	14.0
60°-70°	234.8	9.5
70°-80°	120.9	4.9
80°-90°	27.8	1.1
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°	806.5	32.7
0°-40°	1296.8	52.6
0°-60°	2081.9	84.4
0°-90°	2465.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2465.4	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1000	1000	1000	1000	1000	
5°	1097	1058	1005	938	926	109
15°	1326	1214	960	780	698	377
25°	1444	1271	878	582	546	651
35°	1017	1248	752	467	457	630
45°	507	921	574	378	385	402
55°	294	526	381	293	296	268
65°	184	280	229	200	203	184
75°	88	123	111	102	106	95
85°	18	24	22	21	20	22
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°	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5
2.5°	1042.7	1042.7	1044.4	1044.0	1042.3	1039.3	1036.7	1033.7	1025.9	1020.7	1025.5
5°	1096.9	1099.1	1101.3	1100.8	1094.4	1088.8	1080.6	1078.4	1064.7	1058.2	1056.0
7.5°	1165.8	1165.4	1166.3	1158.9	1153.3	1147.7	1137.0	1123.6	1107.3	1098.2	1089.6
10°	1231.3	1235.1	1233.4	1224.4	1215.8	1209.7	1192.5	1176.2	1155.9	1136.6	1125.8
12.5°	1284.7	1282.5	1289.8	1281.2	1270.9	1259.7	1242.9	1228.3	1202.0	1175.7	1153.8
15°	1326.0	1323.8	1324.7	1318.2	1307.5	1297.6	1280.3	1264.8	1239.9	1213.6	1190.4
17.5°	1362.1	1364.3	1360.4	1352.7	1338.0	1326.4	1304.9	1283.8	1257.5	1231.3	1208.5
20°	1407.8	1409.9	1402.6	1391.4	1377.2	1357.4	1335.0	1304.9	1275.6	1243.3	1214.9
22.5°	1443.9	1442.6	1440.1	1429.3	1414.2	1395.7	1363.4	1330.3	1295.4	1255.4	1218.8
25°	1443.9	1445.7	1447.0	1441.4	1431.5	1416.0	1394.0	1359.1	1320.0	1270.9	1219.6
27.5°	1397.4	1405.2	1410.8	1410.8	1408.6	1408.2	1395.3	1373.3	1336.7	1287.2	1230.4
30°	1301.0	1311.3	1320.0	1333.3	1349.2	1359.6	1363.4	1354.8	1335.9	1294.1	1235.1
32.5°	1182.2	1181.3	1199.0	1220.5	1251.9	1273.9	1295.8	1308.8	1307.9	1282.9	1233.9
35°	1016.9	1028.9	1050.0	1080.2	1120.6	1156.8	1204.6	1229.5	1249.3	1248.5	1217.1
37.5°	855.9	857.6	881.3	922.6	958.3	1014.3	1076.7	1128.8	1176.6	1192.1	1181.8
40°	712.9	725.0	740.9	775.4	811.1	860.2	939.4	1009.1	1068.1	1113.7	1126.2
42.5°	602.7	609.2	624.7	654.8	686.7	745.2	803.3	877.8	952.3	1025.1	1062.5
45°	507.1	513.2	527.4	548.5	578.2	624.2	684.1	756.4	836.1	921.3	974.7
47.5°	437.4	439.6	450.3	466.2	494.2	527.8	576.0	646.2	726.7	809.8	888.1
50°	382.3	385.7	393.1	405.5	426.2	457.6	496.0	548.9	623.4	709.5	789.1
52.5°	334.1	336.7	345.3	352.2	368.1	394.8	427.9	476.1	539.0	616.5	698.7
55°	294.5	297.1	301.4	309.1	321.6	339.7	368.1	406.4	460.2	525.7	602.7
57.5°	264.3	265.6	266.5	271.7	281.6	296.2	320.3	350.4	392.2	452.0	520.5
60°	235.9	235.5	238.9	242.8	248.8	257.9	275.5	302.7	340.1	388.8	452.5
62.5°	207.5	209.7	211.8	214.8	218.7	223.9	238.1	258.3	288.0	329.8	382.3
65°	184.3	184.7	186.4	186.8	191.6	196.7	207.5	221.3	245.8	279.8	323.3
67.5°	161.9	162.3	161.9	163.2	165.3	169.6	175.2	186.4	205.4	232.9	270.8
70°	141.2	139.9	138.2	140.3	142.5	144.7	148.5	157.1	171.3	192.0	223.4
72.5°	113.7	114.5	115.4	116.2	116.7	119.7	123.1	129.2	140.3	156.3	180.4
75°	87.8	87.8	89.1	90.0	93.9	94.7	98.6	102.9	111.9	123.1	142.1
77.5°	64.6	64.1	66.3	66.7	68.9	71.5	73.6	77.9	84.8	94.3	106.8
80°	46.5	46.9	46.5	46.5	47.8	49.5	52.5	54.7	59.4	65.4	74.5
82.5°	31.0	31.0	31.4	31.4	32.7	32.7	34.4	36.2	39.2	43.1	49.5
85°	18.1	18.1	17.7	17.7	18.1	18.1	19.8	21.1	21.5	24.1	26.3
87.5°	7.7	7.7	7.3	7.7	7.3	7.7	7.3	8.2	8.6	9.0	9.9
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°	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5
2.5°	1024.2	1022.9	1022.5	1017.7	1013.0	1007.4	1006.5	1008.3	1000.9	991.9	991.5
5°	1050.9	1046.1	1039.3	1030.2	1022.5	1012.1	1007.0	1004.8	993.6	980.7	978.1
7.5°	1080.6	1069.0	1056.5	1042.7	1028.9	1013.9	1004.4	998.8	983.3	967.4	960.9
10°	1109.0	1093.9	1075.0	1053.9	1034.5	1013.9	999.7	989.7	970.8	951.0	941.1
12.5°	1141.7	1116.8	1090.1	1063.8	1040.1	1013.4	991.9	976.8	954.9	933.8	919.1
15°	1165.4	1129.2	1108.6	1071.1	1041.4	1009.1	982.9	960.0	935.9	912.7	898.1
17.5°	1183.9	1155.5	1119.3	1078.0	1038.0	1003.1	970.4	945.0	913.1	887.7	871.8
20°	1189.9	1161.1	1124.1	1078.9	1038.8	994.1	955.3	924.7	890.7	859.7	837.8
22.5°	1187.8	1155.1	1117.2	1072.8	1032.4	979.4	938.9	902.4	864.5	831.3	801.2
25°	1183.1	1145.2	1103.4	1061.6	1016.4	964.3	917.9	877.8	832.2	796.0	759.9
27.5°	1180.5	1131.0	1084.0	1038.8	995.8	945.4	895.5	850.7	800.3	756.4	709.9
30°	1179.6	1120.6	1061.6	1009.1	969.5	918.3	868.8	821.4	762.4	712.9	665.6
32.5°	1177.9	1112.0	1042.7	979.8	934.6	888.6	836.1	789.1	722.4	670.7	619.9
35°	1166.3	1096.9	1020.7	949.3	896.3	848.5	801.6	752.5	683.2	627.7	579.0
37.5°	1141.3	1080.6	999.2	918.7	855.4	806.8	763.3	709.9	642.8	582.1	536.9
40°	1104.3	1054.8	976.0	888.6	814.1	760.7	714.7	667.3	598.0	539.9	499.0
42.5°	1056.0	1017.7	943.7	853.3	774.1	714.2	667.3	620.4	556.7	500.7	464.1
45°	992.8	969.1	904.1	815.0	735.3	666.0	615.2	574.3	515.3	464.1	430.5
47.5°	922.6	912.3	858.0	772.3	688.4	621.2	561.8	518.8	472.7	429.2	399.5
50°	837.8	846.0	803.3	724.6	643.2	574.3	516.2	469.7	429.7	396.1	369.8
52.5°	758.6	777.9	743.5	668.6	595.8	524.4	465.8	423.2	391.8	364.2	341.4
55°	670.3	698.3	677.6	613.1	540.7	477.4	418.9	380.6	353.5	332.4	313.0
57.5°	585.5	625.1	610.0	551.9	490.4	428.8	373.7	335.8	316.4	300.9	284.6
60°	510.2	546.3	544.2	494.7	433.1	378.4	333.2	299.2	282.0	271.7	257.4
62.5°	442.6	479.2	475.7	430.9	382.3	331.5	293.2	262.2	249.7	238.5	229.5
65°	373.7	405.1	406.8	373.7	326.8	285.9	253.1	228.6	217.4	210.5	204.1
67.5°	311.3	341.8	344.8	318.6	277.3	241.9	217.4	196.7	186.8	180.8	176.1
70°	256.6	281.6	287.2	265.2	230.3	202.8	182.1	166.2	159.7	153.7	152.0
72.5°	207.9	228.2	232.0	211.8	186.0	165.3	149.4	137.3	132.6	126.6	125.3
75°	165.3	179.5	180.0	166.6	147.2	131.3	118.4	111.1	105.9	101.6	100.7
77.5°	120.1	132.6	136.5	126.6	110.6	97.3	90.0	84.4	80.9	78.8	78.4
80°	87.0	95.1	96.9	88.3	78.8	70.6	65.4	60.7	58.5	56.4	55.5
82.5°	54.2	61.6	62.0	56.0	51.2	45.6	41.3	39.6	38.3	37.0	37.0
85°	29.3	33.1	32.7	30.1	28.0	25.0	23.2	22.4	21.5	20.7	20.7
87.5°	11.2	12.5	12.5	12.9	11.2	9.9	9.0	9.5	9.0	9.0	9.0
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°	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5	1000.5
2.5°	988.5	986.7	982.4	975.5	971.7	963.1	963.5	965.2	965.6	964.3	963.9
5°	970.8	965.6	958.8	950.1	944.1	937.7	933.4	935.9	934.6	934.2	932.1
7.5°	951.4	944.5	935.9	927.3	920.4	911.8	908.4	905.4	901.9	901.5	899.8
10°	932.1	923.5	913.5	901.1	891.6	880.8	870.5	864.9	858.4	853.7	843.8
12.5°	909.2	894.6	883.4	870.5	853.3	836.1	824.4	808.5	799.9	791.3	779.7
15°	883.0	864.0	844.7	818.8	803.8	779.7	762.4	750.8	737.5	728.9	719.0
17.5°	845.5	825.7	801.2	771.9	745.2	720.7	708.2	693.1	687.5	668.6	666.9
20°	808.5	778.8	748.2	718.5	688.8	671.2	655.2	645.3	635.0	623.0	619.1
22.5°	766.7	728.0	695.7	668.2	641.0	621.7	613.9	602.7	592.8	585.9	579.5
25°	715.9	680.2	647.5	621.7	597.1	582.5	572.6	564.4	560.1	552.3	549.8
27.5°	669.0	633.3	607.0	582.9	563.1	550.2	541.6	534.3	528.7	527.4	524.4
30°	621.2	590.7	565.7	545.0	527.4	520.5	512.3	508.9	505.4	503.7	500.3
32.5°	578.2	551.1	529.1	509.3	499.0	492.5	488.2	484.8	482.2	481.3	480.5
35°	539.0	514.0	496.0	481.7	474.0	467.1	465.0	461.9	460.6	460.2	459.8
37.5°	504.6	481.3	467.5	455.1	449.5	443.0	443.4	442.1	441.3	438.7	440.4
40°	469.7	451.6	437.4	427.5	423.6	421.5	420.6	419.8	420.2	420.2	419.8
42.5°	437.8	421.9	412.9	403.4	401.7	399.9	399.9	398.7	399.1	401.2	402.1
45°	409.0	396.5	388.3	380.6	380.6	378.4	380.1	379.7	381.0	382.3	383.2
47.5°	380.1	368.9	362.9	359.0	357.3	357.3	358.6	360.8	361.6	362.1	362.9
50°	351.3	343.1	338.0	335.8	335.4	337.5	338.8	338.4	339.7	341.4	342.7
52.5°	325.9	318.6	315.1	314.3	314.3	316.0	316.4	317.7	318.6	318.6	320.3
55°	299.6	294.5	291.9	291.5	291.9	292.7	294.5	295.3	294.9	295.8	295.8
57.5°	273.4	269.5	268.2	269.5	269.5	271.2	271.2	271.2	270.8	272.5	272.1
60°	248.8	244.5	245.8	245.4	246.7	246.7	248.0	248.0	246.7	248.4	249.3
62.5°	224.3	223.4	221.7	221.7	223.0	223.4	222.1	223.4	223.9	225.2	226.0
65°	198.5	195.5	196.7	196.3	197.6	199.8	198.0	198.0	199.3	201.0	201.9
67.5°	173.9	171.3	172.6	173.1	173.1	173.9	172.6	173.5	175.2	177.4	178.7
70°	149.0	148.1	148.5	148.1	148.1	150.2	150.7	150.2	152.0	154.1	154.6
72.5°	123.6	124.4	123.6	124.4	125.3	124.0	124.4	125.7	127.4	128.7	130.9
75°	100.3	99.0	99.4	101.6	101.2	102.0	101.6	102.9	105.9	105.0	105.5
77.5°	77.5	77.1	77.5	77.9	78.4	79.6	79.2	81.4	81.8	82.2	83.1
80°	55.1	55.5	56.0	56.8	58.1	57.7	58.5	59.0	60.7	59.0	60.3
82.5°	37.5	37.0	37.9	37.9	39.2	40.0	38.7	38.7	38.7	38.3	38.3
85°	20.7	22.0	22.0	22.0	21.1	21.1	21.5	21.1	21.1	21.1	20.7
87.5°	9.0	9.0	8.6	8.2	8.6	8.2	8.2	7.7	7.3	7.3	6.9
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: P242139

CATALOG NUMBER: S121DR-S685D935-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1000.5	1000.5	1000.5	1000.5
2.5°	961.3	963.5	960.9	959.2
5°	929.9	929.9	927.3	926.5
7.5°	894.6	895.0	890.3	886.9
10°	841.7	839.1	832.2	828.3
12.5°	771.0	774.9	764.6	756.8
15°	709.5	698.7	703.0	698.3
17.5°	657.8	654.4	649.6	650.1
20°	612.6	610.0	607.5	607.9
22.5°	576.9	574.7	573.9	570.9
25°	547.2	548.0	545.9	545.9
27.5°	522.6	521.4	520.1	518.3
30°	499.4	499.8	498.5	497.7
32.5°	478.7	479.2	478.3	477.0
35°	458.5	458.1	458.5	457.2
37.5°	440.0	439.6	440.0	441.7
40°	421.0	421.5	420.2	421.9
42.5°	402.5	403.0	403.0	402.1
45°	382.3	383.6	384.0	384.9
47.5°	362.5	364.6	363.8	364.2
50°	342.7	342.3	342.3	341.8
52.5°	320.7	319.4	319.0	319.4
55°	294.5	296.2	296.2	296.2
57.5°	272.9	273.4	274.7	272.9
60°	251.0	251.0	251.4	254.9
62.5°	226.4	226.9	227.7	228.2
65°	202.8	204.1	203.6	203.2
67.5°	179.5	179.5	180.0	179.1
70°	155.4	155.4	155.4	157.6
72.5°	130.4	130.4	130.9	131.7
75°	107.2	107.2	107.2	105.9
77.5°	81.8	82.2	82.2	82.7
80°	59.4	59.0	59.0	58.5
82.5°	37.5	37.9	37.5	37.0
85°	20.7	21.1	19.8	19.8
87.5°	7.3	7.3	6.9	7.7
90°	0.0	0.0	0.0	0.0

(END OF REPORT)