

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: P242979

Luminaire Tested: **S121DR-H685D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242979
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-H685D830-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2533.5 lumens
Efficiency: N/A
Efficacy: 107.4 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

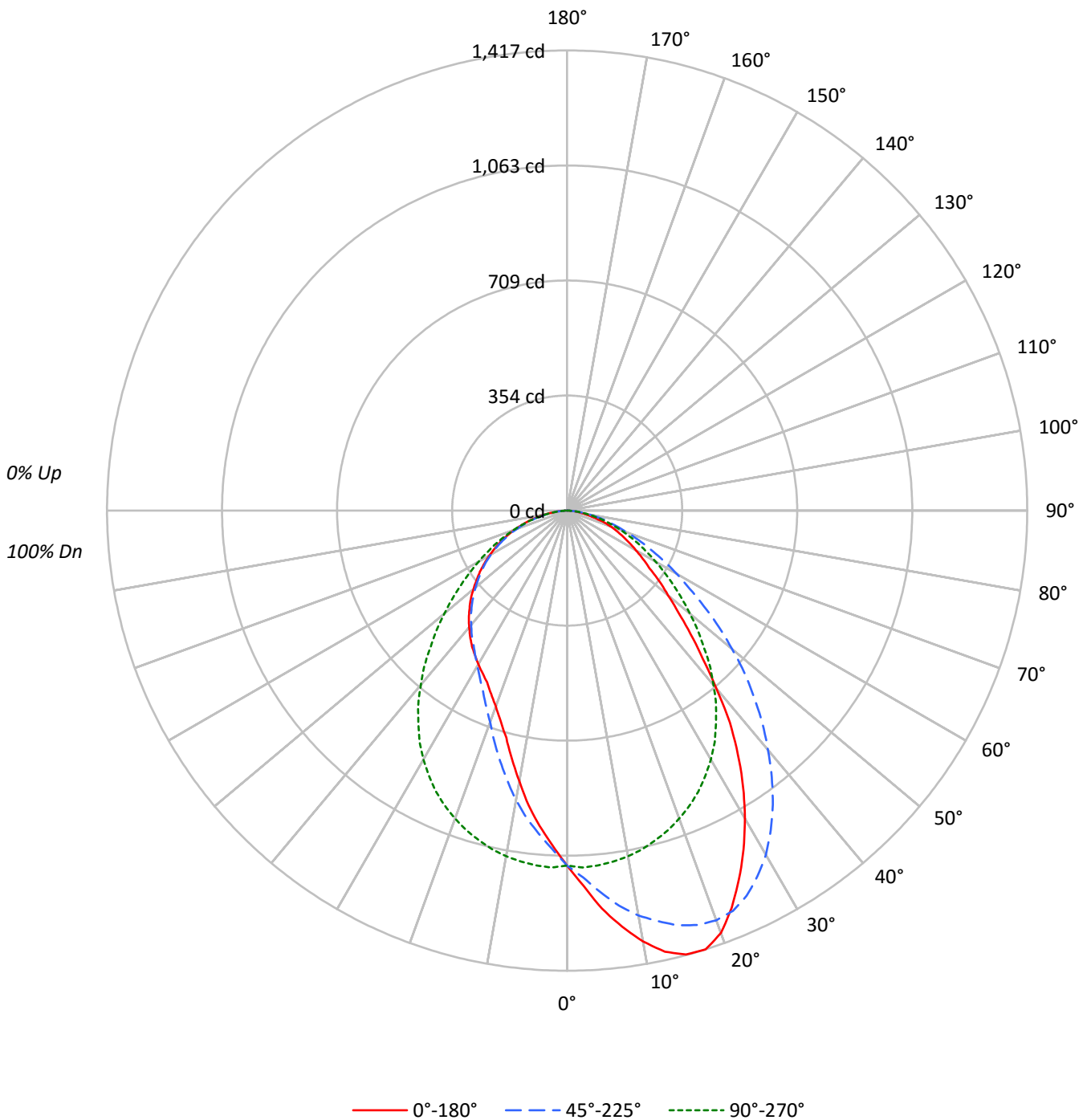
Input Watts (W): 23.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	81	98	91	85	80	88	83	79	84	80	77	81	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	72	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	53	45	40	51	45	40	50	44	40	38
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36	34
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33	31
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30	28

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	32388	32388	32388
5°	36596	32616	28978
10°	40539	32518	25474
15°	43411	32233	22218
20°	43652	31815	20230
25°	40944	31218	19076
30°	37460	30275	18698
35°	33173	28890	18465
40°	27640	27098	18144
45°	22531	24932	17813
50°	18701	22721	17364
55°	16004	20596	16913
60°	14501	18643	16379
65°	13391	16967	15796
70°	12354	15290	14866
75°	9971	13554	13703
80°	7951	10954	11705
85°	5983	8091	9587



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	104.4	4.1
10°-20°	299.2	11.8
20°-30°	435.6	17.2
30°-40°	485.6	19.2
40°-50°	449.0	17.7
50°-60°	357.7	14.1
60°-70°	244.8	9.7
70°-80°	127.1	5.0
80°-90°	30.1	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°	839.2	33.1
0°-40°	1324.8	52.3
0°-60°	2131.5	84.1
0°-90°	2533.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2533.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1093	1093	1093	1093	1093	
5°	1230	1179	1097	999	974	121
15°	1415	1322	1051	798	724	397
25°	1252	1308	955	614	584	574
35°	917	1104	799	502	510	569
45°	538	814	595	415	425	419
55°	310	514	399	320	327	283
65°	191	284	242	219	225	190
75°	87	128	118	112	120	96
85°	18	24	24	25	28	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°	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1
2.5°	1156.5	1156.5	1153.4	1154.7	1152.9	1149.9	1145.0	1139.7	1133.1	1130.5	1129.2
5°	1230.4	1232.1	1229.9	1225.5	1224.7	1221.1	1210.6	1204.4	1190.3	1179.3	1175.8
7.5°	1292.0	1295.1	1295.1	1287.2	1283.6	1274.8	1267.4	1257.2	1239.6	1227.3	1217.2
10°	1347.4	1348.8	1343.9	1339.5	1332.5	1325.4	1312.7	1299.9	1281.0	1266.0	1249.3
12.5°	1391.4	1394.1	1390.6	1383.5	1375.2	1365.9	1350.1	1333.8	1315.3	1295.1	1277.0
15°	1415.2	1419.2	1419.6	1413.9	1407.7	1396.7	1385.3	1367.7	1347.4	1322.4	1292.9
17.5°	1417.0	1418.7	1420.1	1415.7	1411.7	1407.7	1396.3	1381.8	1362.4	1337.8	1310.5
20°	1384.4	1388.4	1392.8	1388.8	1390.6	1390.6	1385.7	1378.2	1362.4	1342.6	1316.2
22.5°	1323.7	1332.9	1338.6	1342.6	1346.6	1352.3	1358.0	1354.5	1348.3	1333.8	1310.0
25°	1252.4	1259.9	1270.9	1274.4	1277.5	1294.2	1304.3	1311.4	1311.4	1308.3	1292.4
27.5°	1176.7	1181.5	1190.8	1203.1	1214.5	1224.7	1245.8	1259.0	1269.6	1269.6	1261.2
30°	1094.9	1101.9	1112.9	1121.3	1135.3	1156.0	1173.6	1189.5	1213.7	1224.2	1222.5
32.5°	1008.6	1015.6	1027.1	1034.1	1054.4	1071.1	1098.4	1123.0	1150.7	1166.6	1176.3
35°	917.1	917.5	936.9	948.3	965.9	986.6	1020.0	1047.8	1078.1	1104.5	1125.2
37.5°	822.9	822.5	836.1	856.3	870.4	899.5	933.8	964.6	1006.8	1035.0	1067.6
40°	714.6	723.9	735.3	753.8	778.0	812.3	844.9	884.9	927.2	962.4	997.2
42.5°	617.8	625.3	643.8	664.5	690.4	719.5	759.1	803.5	844.9	890.7	929.4
45°	537.7	541.7	552.7	569.4	596.7	629.7	671.1	718.2	767.0	813.7	856.8
47.5°	463.8	475.7	481.4	496.8	516.6	547.4	590.6	632.8	689.1	741.0	788.1
50°	405.7	407.9	418.1	429.5	452.8	475.7	508.3	551.8	604.2	662.7	710.7
52.5°	358.2	357.3	365.7	375.8	392.1	416.3	444.5	486.7	531.1	589.2	641.6
55°	309.8	314.2	318.2	328.3	342.8	361.3	385.0	420.7	462.5	514.0	569.0
57.5°	276.4	276.8	279.0	287.4	297.0	311.6	334.4	364.8	402.2	447.1	500.3
60°	244.7	245.1	249.1	251.7	258.3	270.6	288.2	313.3	346.3	389.4	436.1
62.5°	217.4	217.8	220.0	222.7	228.8	233.7	248.6	270.2	297.0	335.3	375.4
65°	191.0	191.4	191.4	194.9	198.9	203.3	213.9	227.5	253.5	283.8	319.5
67.5°	165.5	168.1	167.2	169.9	173.4	175.6	183.1	195.4	213.0	238.5	269.3
70°	142.6	142.1	143.5	144.8	146.1	149.6	154.5	162.8	177.8	195.8	223.1
72.5°	117.9	115.3	117.1	118.8	121.0	123.7	127.6	133.8	145.2	159.7	180.0
75°	87.1	85.8	88.5	88.9	92.9	96.4	100.8	106.9	115.3	127.6	140.8
77.5°	63.4	65.1	66.0	66.9	67.3	71.3	76.1	81.4	86.3	97.7	107.8
80°	46.6	46.6	47.1	48.0	48.8	49.7	52.8	56.3	60.3	67.3	77.4
82.5°	32.6	32.1	32.1	32.6	33.0	33.9	35.2	36.5	40.0	43.6	48.8
85°	17.6	18.0	18.5	17.6	18.0	18.5	19.4	20.7	21.6	24.2	26.4
87.5°	6.2	7.5	7.0	7.0	7.5	7.5	7.5	8.4	8.4	8.4	9.7
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°	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1
2.5°	1127.9	1126.5	1123.0	1116.0	1111.1	1102.3	1100.6	1100.1	1092.2	1080.3	1079.5
5°	1169.7	1159.5	1151.2	1138.9	1126.5	1111.6	1102.8	1096.6	1082.5	1064.9	1057.0
7.5°	1207.9	1193.4	1176.3	1156.9	1138.9	1117.7	1102.3	1090.0	1069.3	1046.9	1033.2
10°	1238.7	1220.7	1199.1	1173.2	1148.5	1120.8	1099.3	1080.8	1053.5	1025.8	1007.3
12.5°	1259.9	1239.6	1215.0	1184.6	1154.7	1123.0	1091.8	1068.4	1034.1	1002.0	978.2
15°	1283.6	1250.2	1224.7	1190.3	1155.1	1117.3	1084.3	1050.8	1011.2	975.2	944.4
17.5°	1289.4	1258.6	1228.2	1190.3	1153.8	1107.6	1069.3	1032.4	988.4	943.9	914.0
20°	1294.6	1259.4	1222.0	1181.1	1142.8	1095.3	1052.2	1009.0	958.0	910.0	872.6
22.5°	1290.7	1256.4	1214.5	1168.3	1127.0	1078.1	1031.5	984.0	926.8	876.6	834.3
25°	1279.2	1247.6	1204.4	1153.8	1104.1	1054.4	1005.5	954.9	892.9	834.8	788.1
27.5°	1255.9	1227.7	1186.4	1132.7	1080.3	1025.3	974.3	921.5	855.0	795.6	745.9
30°	1224.7	1202.2	1160.4	1106.7	1050.0	991.0	938.6	884.9	815.9	751.2	698.4
32.5°	1181.5	1165.7	1129.6	1077.3	1016.1	953.6	899.9	845.3	771.4	709.8	656.1
35°	1133.1	1125.7	1093.5	1041.2	977.8	912.2	854.6	798.7	730.5	665.4	613.9
37.5°	1076.4	1081.7	1052.6	1000.7	935.1	868.2	807.5	753.4	684.3	621.8	571.2
40°	1020.0	1028.0	1006.0	957.6	889.3	820.3	758.7	700.6	636.3	581.3	531.1
42.5°	957.6	973.4	956.2	909.1	842.7	769.7	705.4	651.3	590.1	539.5	495.5
45°	891.1	911.4	904.3	856.3	790.8	719.0	651.3	595.0	545.7	500.8	460.7
47.5°	823.8	847.1	844.0	804.0	741.0	667.6	600.7	545.2	499.9	463.8	430.4
50°	754.7	778.5	778.9	743.2	684.7	614.8	543.0	492.9	456.8	425.1	397.8
52.5°	687.4	711.1	711.6	683.8	625.3	557.1	491.1	445.3	414.5	389.9	367.0
55°	617.0	644.7	647.3	620.5	568.5	503.0	442.3	398.7	371.4	355.6	335.8
57.5°	545.7	575.6	580.9	559.3	509.1	448.0	396.9	355.1	333.1	322.1	307.2
60°	479.2	508.7	517.1	492.4	451.1	398.7	349.8	314.6	297.0	288.2	277.7
62.5°	418.1	447.5	451.9	430.8	389.9	345.9	308.9	276.8	262.3	255.7	247.3
65°	358.2	384.6	390.3	371.4	334.4	297.9	265.4	242.0	229.3	223.5	218.3
67.5°	303.2	327.8	331.8	314.6	283.8	252.6	228.8	208.6	199.8	192.3	190.1
70°	251.3	273.7	277.2	260.1	235.9	210.3	190.5	176.5	168.1	163.7	160.6
72.5°	203.3	220.9	224.0	213.4	194.5	172.1	156.7	144.8	139.5	135.5	134.2
75°	158.9	176.0	176.5	167.2	151.8	136.4	124.5	118.4	112.2	108.3	107.4
77.5°	121.9	131.6	132.9	128.1	113.1	103.4	94.2	89.8	87.6	83.6	83.6
80°	87.1	92.9	95.1	88.0	81.0	72.6	67.8	64.2	62.5	59.8	59.8
82.5°	54.1	59.0	61.6	56.3	52.8	48.4	44.9	42.7	41.4	40.0	39.6
85°	29.5	33.0	33.0	31.2	28.2	26.0	24.6	23.8	23.3	22.9	22.4
87.5°	10.6	13.2	11.9	12.3	11.0	10.6	10.1	10.1	10.6	9.7	9.7
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1	1093.1
2.5°	1073.7	1071.5	1064.9	1058.8	1053.9	1043.4	1041.2	1042.0	1042.0	1042.5	1037.6
5°	1047.8	1038.5	1028.0	1018.3	1010.8	998.9	992.3	990.6	989.2	986.6	981.8
7.5°	1018.3	1007.7	992.8	984.0	968.1	954.9	945.7	939.5	935.6	929.8	921.9
10°	988.4	973.0	956.2	938.6	922.8	905.2	890.7	883.6	875.3	869.5	860.7
12.5°	958.4	936.9	914.0	893.7	872.2	851.5	836.5	826.9	811.9	803.5	794.3
15°	919.3	892.9	873.5	838.3	827.7	797.8	779.8	772.3	757.8	755.1	740.6
17.5°	882.3	851.9	823.3	793.9	765.7	745.0	729.6	719.9	708.5	701.4	691.8
20°	836.1	804.4	770.1	739.3	715.5	693.5	683.8	671.5	664.9	657.9	650.8
22.5°	792.1	753.4	719.0	694.0	669.8	651.7	641.2	632.8	627.1	620.0	615.2
25°	745.0	708.9	677.2	651.3	628.0	613.9	605.1	600.2	596.7	591.4	588.4
27.5°	700.1	663.6	632.4	612.6	593.6	581.3	576.9	572.5	568.1	566.3	565.9
30°	652.2	618.7	593.2	576.0	558.9	552.3	550.1	545.7	546.5	547.0	545.7
32.5°	611.7	579.1	559.7	545.2	532.0	527.2	526.7	525.0	525.4	527.6	526.7
35°	569.9	545.7	526.3	514.4	506.1	502.5	503.0	503.4	506.1	506.5	508.3
37.5°	534.2	510.9	498.1	486.7	482.7	482.7	483.2	483.6	485.8	488.5	489.3
40°	499.0	480.1	469.1	461.6	459.4	459.4	461.2	463.4	464.7	467.3	467.8
42.5°	467.3	451.5	443.1	435.7	436.5	438.7	439.2	440.5	444.0	444.5	445.3
45°	436.1	424.2	415.9	413.7	413.7	415.4	417.6	418.5	421.1	421.6	422.5
47.5°	409.2	396.9	390.8	388.6	389.9	392.1	395.2	396.5	398.7	398.2	400.4
50°	379.3	369.2	364.4	363.5	364.4	368.3	369.6	372.7	374.9	376.2	377.1
52.5°	350.7	342.8	340.6	340.2	341.9	344.6	346.3	349.4	352.0	352.0	351.6
55°	323.4	316.4	313.8	316.0	318.2	319.5	323.0	324.8	327.4	327.8	327.4
57.5°	295.7	289.6	288.7	289.6	294.0	296.6	298.8	298.8	300.1	300.6	301.9
60°	267.1	263.2	262.3	264.5	269.3	271.1	272.4	272.8	274.6	273.7	276.4
62.5°	240.3	236.3	238.1	240.3	242.0	244.7	245.5	247.7	247.3	248.2	249.5
65°	212.5	210.3	210.8	213.4	215.6	219.1	219.1	219.1	221.3	221.3	222.2
67.5°	185.7	184.4	186.1	188.3	188.8	191.0	190.5	193.2	194.9	195.8	196.7
70°	159.7	158.9	158.9	161.1	163.3	164.1	165.0	166.8	167.2	168.5	170.7
72.5°	135.1	132.5	132.9	136.0	136.0	137.7	139.9	139.9	142.6	143.0	145.2
75°	108.3	107.4	108.3	110.0	112.2	111.8	114.4	114.0	114.9	117.9	118.4
77.5°	84.5	83.2	85.4	86.3	86.7	87.1	88.0	90.2	92.0	93.3	93.7
80°	60.7	60.3	62.5	63.4	62.9	63.8	65.1	67.3	67.3	68.2	69.5
82.5°	40.9	40.0	41.4	42.7	43.6	44.0	44.0	44.9	45.3	46.2	46.2
85°	23.3	23.3	24.2	24.6	25.5	25.1	26.0	25.5	26.4	27.3	26.8
87.5°	10.1	10.1	10.1	10.1	10.6	10.6	11.0	11.0	10.6	11.0	10.1
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: P242979

CATALOG NUMBER: S121DR-H685D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1093.1	1093.1	1093.1	1093.1
2.5°	1035.9	1036.8	1034.6	1032.4
5°	981.3	978.2	975.2	974.3
7.5°	920.2	920.2	912.7	914.4
10°	854.6	851.9	846.2	846.7
12.5°	790.8	788.6	785.5	784.2
15°	733.1	734.4	736.6	724.3
17.5°	687.8	684.3	682.5	680.3
20°	647.3	645.6	642.0	641.6
22.5°	616.1	612.1	611.2	611.7
25°	586.2	586.2	586.2	583.5
27.5°	565.0	565.0	563.7	564.1
30°	546.5	547.4	546.1	546.5
32.5°	528.9	529.4	528.5	528.1
35°	509.1	510.5	510.0	510.5
37.5°	490.2	491.1	490.2	490.2
40°	468.7	470.9	470.4	469.1
42.5°	447.1	447.1	448.4	448.0
45°	424.7	423.8	423.8	425.1
47.5°	400.9	402.6	401.8	402.2
50°	378.9	378.4	377.1	376.7
52.5°	352.9	353.8	353.4	351.2
55°	327.8	327.8	327.4	327.4
57.5°	301.0	302.3	301.9	301.9
60°	275.5	276.4	276.8	276.4
62.5°	249.5	250.0	249.5	250.0
65°	224.4	224.4	224.0	225.3
67.5°	197.1	197.6	197.1	198.0
70°	171.2	172.1	172.5	171.6
72.5°	146.5	145.7	146.1	145.2
75°	119.3	119.7	119.3	119.7
77.5°	93.7	94.2	93.7	94.2
80°	69.1	69.1	69.5	68.6
82.5°	46.6	46.6	48.0	46.6
85°	27.3	27.3	26.4	28.2
87.5°	10.6	10.6	10.6	10.6
90°	0.0	0.0	0.0	0.0

(END OF REPORT)