

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: P242984

Luminaire Tested: **S121DR-H685D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242984
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-H685D835-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2688.0 lumens
Efficiency: N/A
Efficacy: 113.9 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

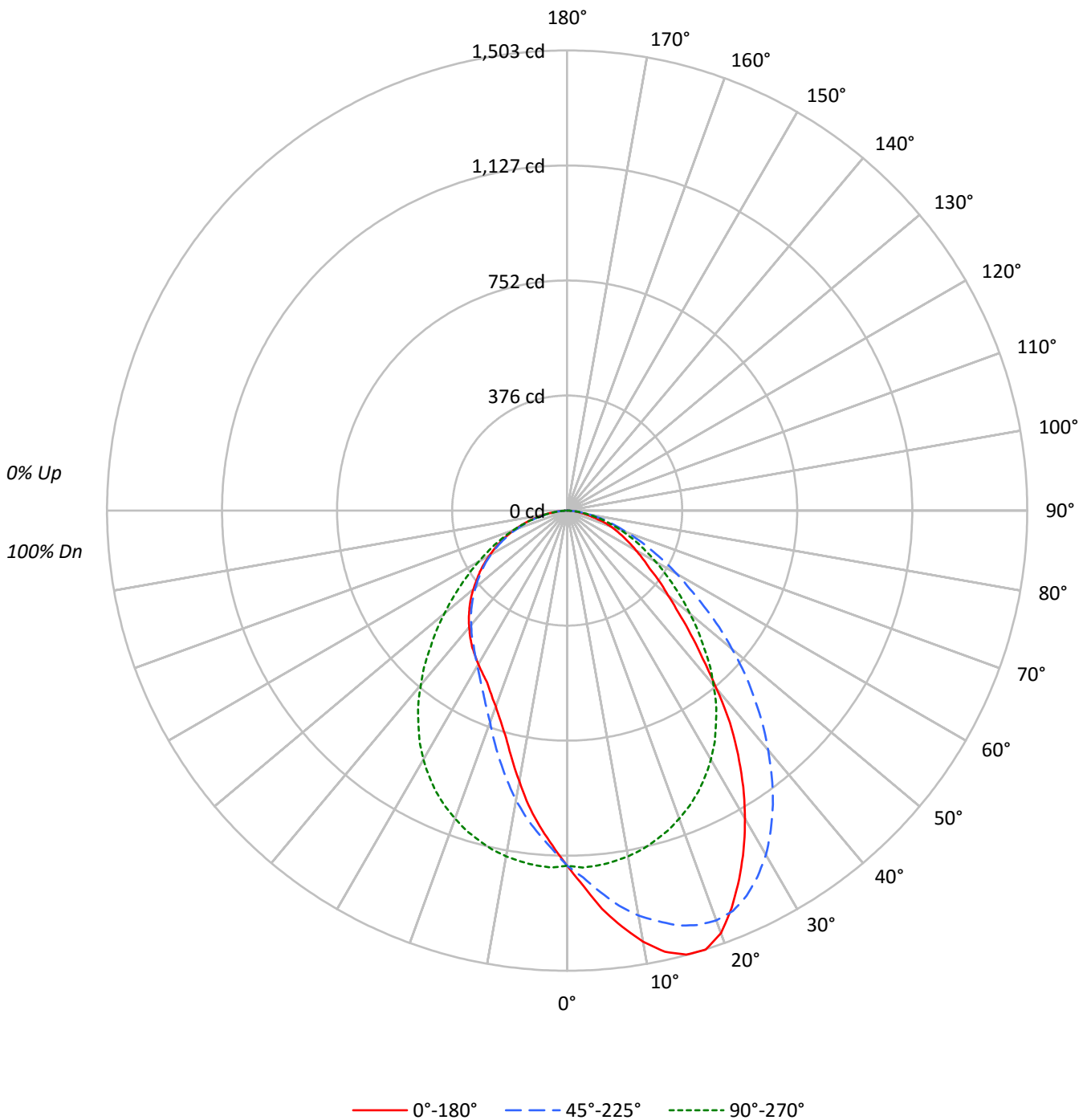
Input Watts (W): 23.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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				
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°	34362	34362	34362
5°	38826	34606	30745
10°	43012	34501	27027
15°	46058	34199	23574
20°	46313	33757	21463
25°	43439	33121	20240
30°	39742	32123	19840
35°	35195	30651	19590
40°	29326	28750	19250
45°	23906	26449	18898
50°	19844	24103	18420
55°	16980	21851	17946
60°	15384	19781	17375
65°	14204	18004	16756
70°	13107	16217	15776
75°	10578	14379	14539
80°	8446	11637	12422
85°	6357	8567	10165



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	110.8	4.1
10°-20°	317.4	11.8
20°-30°	462.2	17.2
30°-40°	515.2	19.2
40°-50°	476.3	17.7
50°-60°	379.5	14.1
60°-70°	259.8	9.7
70°-80°	134.9	5.0
80°-90°	31.9	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°	890.4	33.1
0°-40°	1405.6	52.3
0°-60°	2261.4	84.1
0°-90°	2688.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2688.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1160	1160	1160	1160	1160	
5°	1305	1251	1164	1060	1034	128
15°	1502	1403	1115	846	768	421
25°	1329	1388	1013	651	619	609
35°	973	1172	847	533	542	604
45°	570	863	631	441	451	444
55°	329	545	423	339	347	301
65°	203	301	257	232	239	201
75°	92	135	126	119	127	101
85°	19	26	25	27	30	23
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°	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7
2.5°	1227.0	1227.0	1223.7	1225.1	1223.2	1220.0	1214.8	1209.2	1202.2	1199.4	1198.0
5°	1305.4	1307.3	1304.9	1300.3	1299.3	1295.6	1284.4	1277.8	1262.9	1251.2	1247.5
7.5°	1370.8	1374.0	1374.0	1365.6	1361.9	1352.5	1344.6	1333.9	1315.2	1302.1	1291.4
10°	1429.6	1431.0	1425.8	1421.2	1413.7	1406.2	1392.7	1379.2	1359.1	1343.2	1325.5
12.5°	1476.3	1479.1	1475.3	1467.9	1459.0	1449.2	1432.4	1415.1	1395.5	1374.0	1354.9
15°	1501.5	1505.7	1506.2	1500.1	1493.5	1481.9	1469.7	1451.1	1429.6	1403.0	1371.7
17.5°	1503.4	1505.2	1506.6	1501.9	1497.7	1493.5	1481.4	1466.0	1445.5	1419.3	1390.4
20°	1468.8	1473.0	1477.7	1473.5	1475.3	1475.3	1470.2	1462.3	1445.5	1424.4	1396.4
22.5°	1404.4	1414.2	1420.2	1424.4	1428.6	1434.7	1440.8	1437.1	1430.5	1415.1	1389.9
25°	1328.7	1336.7	1348.3	1352.1	1355.3	1373.1	1383.8	1391.3	1391.3	1388.0	1371.2
27.5°	1248.4	1253.6	1263.4	1276.4	1288.6	1299.3	1321.7	1335.7	1346.9	1346.9	1338.1
30°	1161.6	1169.1	1180.7	1189.6	1204.5	1226.5	1245.2	1262.0	1287.7	1298.9	1297.0
32.5°	1070.1	1077.6	1089.7	1097.2	1118.6	1136.4	1165.3	1191.5	1220.9	1237.7	1248.0
35°	973.0	973.4	994.0	1006.1	1024.8	1046.7	1082.2	1111.6	1143.9	1171.9	1193.8
37.5°	873.1	872.6	887.1	908.5	923.5	954.3	990.7	1023.4	1068.2	1098.1	1132.6
40°	758.2	768.0	780.2	799.8	825.4	861.9	896.4	938.9	983.7	1021.1	1057.9
42.5°	655.5	663.4	683.0	705.0	732.5	763.3	805.4	852.5	896.4	945.0	986.0
45°	570.5	574.7	586.4	604.1	633.1	668.1	712.0	761.9	813.8	863.3	909.0
47.5°	492.1	504.7	510.8	527.1	548.1	580.8	626.6	671.4	731.1	786.2	836.2
50°	430.5	432.8	443.5	455.7	480.4	504.7	539.2	585.5	641.0	703.1	754.0
52.5°	380.0	379.1	388.0	398.7	416.0	441.7	471.5	516.4	563.5	625.2	680.7
55°	328.7	333.4	337.6	348.3	363.7	383.3	408.5	446.3	490.7	545.3	603.7
57.5°	293.2	293.7	296.0	304.9	315.1	330.6	354.8	387.0	426.7	474.3	530.8
60°	259.6	260.1	264.3	267.1	274.1	287.1	305.8	332.4	367.4	413.2	462.7
62.5°	230.6	231.1	233.4	236.2	242.8	247.9	263.8	286.7	315.1	355.8	398.2
65°	202.6	203.1	203.1	206.8	211.0	215.7	226.9	241.4	268.9	301.1	339.0
67.5°	175.5	178.3	177.4	180.2	184.0	186.3	194.2	207.3	226.0	253.0	285.7
70°	151.3	150.8	152.2	153.6	155.0	158.7	163.9	172.7	188.6	207.8	236.7
72.5°	125.1	122.3	124.2	126.1	128.4	131.2	135.4	141.9	154.1	169.5	191.0
75°	92.4	91.0	93.8	94.3	98.5	102.2	106.9	113.5	122.3	135.4	149.4
77.5°	67.2	69.1	70.0	71.0	71.4	75.6	80.8	86.4	91.5	103.6	114.4
80°	49.5	49.5	50.0	50.9	51.8	52.8	56.0	59.8	64.0	71.4	82.2
82.5°	34.5	34.1	34.1	34.5	35.0	35.9	37.4	38.8	42.5	46.2	51.8
85°	18.7	19.1	19.6	18.7	19.1	19.6	20.5	21.9	22.9	25.7	28.0
87.5°	6.5	7.9	7.5	7.5	7.9	7.9	7.9	8.9	8.9	8.9	10.3
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7
2.5°	1196.6	1195.2	1191.5	1184.0	1178.9	1169.5	1167.7	1167.2	1158.8	1146.2	1145.3
5°	1241.0	1230.2	1221.4	1208.3	1195.2	1179.3	1170.0	1163.5	1148.5	1129.8	1121.4
7.5°	1281.6	1266.2	1248.0	1227.4	1208.3	1185.9	1169.5	1156.5	1134.5	1110.7	1096.2
10°	1314.3	1295.1	1272.2	1244.7	1218.6	1189.1	1166.3	1146.7	1117.7	1088.3	1068.7
12.5°	1336.7	1315.2	1289.1	1256.8	1225.1	1191.5	1158.3	1133.6	1097.2	1063.1	1037.9
15°	1361.9	1326.4	1299.3	1262.9	1225.6	1185.4	1150.4	1114.9	1072.9	1034.6	1001.9
17.5°	1368.0	1335.3	1303.1	1262.9	1224.2	1175.1	1134.5	1095.3	1048.6	1001.5	969.7
20°	1373.6	1336.2	1296.5	1253.1	1212.5	1162.1	1116.3	1070.6	1016.4	965.5	925.8
22.5°	1369.4	1332.9	1288.6	1239.6	1195.7	1143.9	1094.4	1043.9	983.2	930.0	885.2
25°	1357.2	1323.6	1277.8	1224.2	1171.4	1118.6	1066.8	1013.1	947.3	885.7	836.2
27.5°	1332.5	1302.6	1258.7	1201.7	1146.2	1087.8	1033.7	977.6	907.1	844.1	791.4
30°	1299.3	1275.5	1231.2	1174.2	1114.0	1051.4	995.9	938.9	865.6	797.0	740.9
32.5°	1253.6	1236.8	1198.5	1142.9	1078.0	1011.7	954.8	896.9	818.4	753.1	696.1
35°	1202.2	1194.3	1160.2	1104.6	1037.4	967.8	906.7	847.4	775.0	705.9	651.3
37.5°	1142.0	1147.6	1116.8	1061.7	992.1	921.2	856.7	799.3	726.0	659.7	606.0
40°	1082.2	1090.6	1067.3	1015.9	943.6	870.3	804.9	743.3	675.1	616.7	563.5
42.5°	1015.9	1032.7	1014.5	964.6	894.1	816.6	748.4	691.0	626.1	572.4	525.7
45°	945.4	966.9	959.4	908.5	839.0	762.9	691.0	631.2	578.9	531.3	488.8
47.5°	874.0	898.7	895.5	853.0	786.2	708.3	637.3	578.5	530.4	492.1	456.6
50°	800.7	825.9	826.4	788.6	726.5	652.2	576.1	522.9	484.6	451.0	422.1
52.5°	729.3	754.5	754.9	725.5	663.4	591.1	521.0	472.5	439.8	413.7	389.4
55°	654.6	684.0	686.8	658.3	603.2	533.6	469.2	423.0	394.0	377.2	356.2
57.5°	578.9	610.7	616.3	593.4	540.2	475.3	421.1	376.8	353.4	341.8	325.9
60°	508.4	539.7	548.6	522.4	478.6	423.0	371.2	333.8	315.1	305.8	294.6
62.5°	443.5	474.8	479.5	457.1	413.7	367.0	327.7	293.7	278.3	271.3	262.4
65°	380.0	408.1	414.1	394.0	354.8	316.1	281.5	256.8	243.2	237.2	231.6
67.5°	321.7	347.8	352.0	333.8	301.1	268.0	242.8	221.3	212.0	204.0	201.7
70°	266.6	290.4	294.1	275.9	250.2	223.2	202.2	187.2	178.3	173.7	170.4
72.5°	215.7	234.4	237.6	226.4	206.4	182.5	166.2	153.6	148.0	143.8	142.4
75°	168.5	186.8	187.2	177.4	161.1	144.7	132.1	125.6	119.1	114.9	113.9
77.5°	129.3	139.6	141.0	135.9	120.0	109.7	99.9	95.2	92.9	88.7	88.7
80°	92.4	98.5	100.8	93.4	85.9	77.0	71.9	68.2	66.3	63.5	63.5
82.5°	57.4	62.6	65.4	59.8	56.0	51.4	47.6	45.3	43.9	42.5	42.0
85°	31.3	35.0	35.0	33.1	29.9	27.5	26.1	25.2	24.7	24.3	23.8
87.5°	11.2	14.0	12.6	13.1	11.7	11.2	10.7	10.7	11.2	10.3	10.3
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°	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7	1159.7
2.5°	1139.2	1136.9	1129.8	1123.3	1118.2	1107.0	1104.6	1105.6	1105.6	1106.0	1100.9
5°	1111.6	1101.8	1090.6	1080.4	1072.4	1059.8	1052.8	1050.9	1049.5	1046.7	1041.6
7.5°	1080.4	1069.2	1053.3	1043.9	1027.1	1013.1	1003.3	996.8	992.6	986.5	978.1
10°	1048.6	1032.3	1014.5	995.9	979.0	960.4	945.0	937.5	928.6	922.6	913.2
12.5°	1016.9	994.0	969.7	948.2	925.4	903.4	887.5	877.3	861.4	852.5	842.7
15°	975.3	947.3	926.8	889.4	878.2	846.5	827.3	819.4	804.0	801.2	785.8
17.5°	936.1	903.9	873.5	842.2	812.4	790.4	774.1	763.8	751.7	744.2	733.9
20°	887.1	853.5	817.0	784.4	759.1	735.8	725.5	712.5	705.5	698.0	690.5
22.5°	840.4	799.3	762.9	736.3	710.6	691.4	680.2	671.4	665.3	657.8	652.7
25°	790.4	752.1	718.5	691.0	666.2	651.3	642.0	636.8	633.1	627.5	624.2
27.5°	742.8	704.1	670.9	649.9	629.8	616.7	612.1	607.4	602.7	600.9	600.4
30°	691.9	656.4	629.4	611.1	592.9	585.9	583.6	578.9	579.9	580.3	578.9
32.5°	649.0	614.4	593.9	578.5	564.5	559.3	558.9	557.0	557.5	559.8	558.9
35°	604.6	578.9	558.4	545.8	536.9	533.2	533.6	534.1	536.9	537.4	539.2
37.5°	566.8	542.0	528.5	516.4	512.2	512.2	512.6	513.1	515.4	518.2	519.2
40°	529.4	509.4	497.7	489.8	487.4	487.4	489.3	491.6	493.0	495.8	496.3
42.5°	495.8	479.0	470.1	462.2	463.1	465.5	465.9	467.3	471.1	471.5	472.5
45°	462.7	450.1	441.2	438.9	438.9	440.7	443.1	444.0	446.8	447.3	448.2
47.5°	434.2	421.1	414.6	412.3	413.7	416.0	419.3	420.7	423.0	422.5	424.9
50°	402.4	391.7	386.6	385.6	386.6	390.8	392.2	395.4	397.8	399.2	400.1
52.5°	372.1	363.7	361.4	360.9	362.8	365.6	367.4	370.7	373.5	373.5	373.0
55°	343.2	335.7	332.9	335.2	337.6	339.0	342.7	344.6	347.4	347.8	347.4
57.5°	313.7	307.2	306.3	307.2	311.9	314.7	317.0	317.0	318.4	318.9	320.3
60°	283.4	279.2	278.3	280.6	285.7	287.6	289.0	289.5	291.3	290.4	293.2
62.5°	254.9	250.7	252.6	254.9	256.8	259.6	260.5	262.9	262.4	263.3	264.7
65°	225.5	223.2	223.6	226.4	228.8	232.5	232.5	232.5	234.8	234.8	235.8
67.5°	197.0	195.6	197.5	199.8	200.3	202.6	202.2	205.0	206.8	207.8	208.7
70°	169.5	168.5	168.5	170.9	173.2	174.1	175.1	176.9	177.4	178.8	181.1
72.5°	143.3	140.5	141.0	144.3	144.3	146.1	148.5	148.5	151.3	151.7	154.1
75°	114.9	113.9	114.9	116.7	119.1	118.6	121.4	120.9	121.9	125.1	125.6
77.5°	89.6	88.2	90.6	91.5	92.0	92.4	93.4	95.7	97.6	99.0	99.4
80°	64.4	64.0	66.3	67.2	66.8	67.7	69.1	71.4	71.4	72.4	73.8
82.5°	43.4	42.5	43.9	45.3	46.2	46.7	46.7	47.6	48.1	49.0	49.0
85°	24.7	24.7	25.7	26.1	27.1	26.6	27.5	27.1	28.0	28.9	28.5
87.5°	10.7	10.7	10.7	10.7	11.2	11.2	11.7	11.7	11.2	11.7	10.7
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: P242984

CATALOG NUMBER: S121DR-H685D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1159.7	1159.7	1159.7	1159.7
2.5°	1099.0	1100.0	1097.6	1095.3
5°	1041.1	1037.9	1034.6	1033.7
7.5°	976.2	976.2	968.3	970.2
10°	906.7	903.9	897.8	898.3
12.5°	839.0	836.6	833.4	832.0
15°	777.8	779.2	781.6	768.5
17.5°	729.7	726.0	724.1	721.8
20°	686.8	684.9	681.2	680.7
22.5°	653.6	649.4	648.5	649.0
25°	621.9	621.9	621.9	619.1
27.5°	599.5	599.5	598.1	598.5
30°	579.9	580.8	579.4	579.9
32.5°	561.2	561.7	560.7	560.3
35°	540.2	541.6	541.1	541.6
37.5°	520.1	521.0	520.1	520.1
40°	497.2	499.6	499.1	497.7
42.5°	474.3	474.3	475.7	475.3
45°	450.5	449.6	449.6	451.0
47.5°	425.3	427.2	426.3	426.7
50°	402.0	401.5	400.1	399.6
52.5°	374.4	375.4	374.9	372.6
55°	347.8	347.8	347.4	347.4
57.5°	319.3	320.7	320.3	320.3
60°	292.3	293.2	293.7	293.2
62.5°	264.7	265.2	264.7	265.2
65°	238.1	238.1	237.6	239.0
67.5°	209.2	209.6	209.2	210.1
70°	181.6	182.5	183.0	182.1
72.5°	155.5	154.5	155.0	154.1
75°	126.5	127.0	126.5	127.0
77.5°	99.4	99.9	99.4	99.9
80°	73.3	73.3	73.8	72.8
82.5°	49.5	49.5	50.9	49.5
85°	28.9	28.9	28.0	29.9
87.5°	11.2	11.2	11.2	11.2
90°	0.0	0.0	0.0	0.0

(END OF REPORT)