

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: P242995

Luminaire Tested: **S121DR-H880D930-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242995
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-H880D930-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: 2826.2 lumens
Efficiency: N/A
Efficacy: 89.7 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

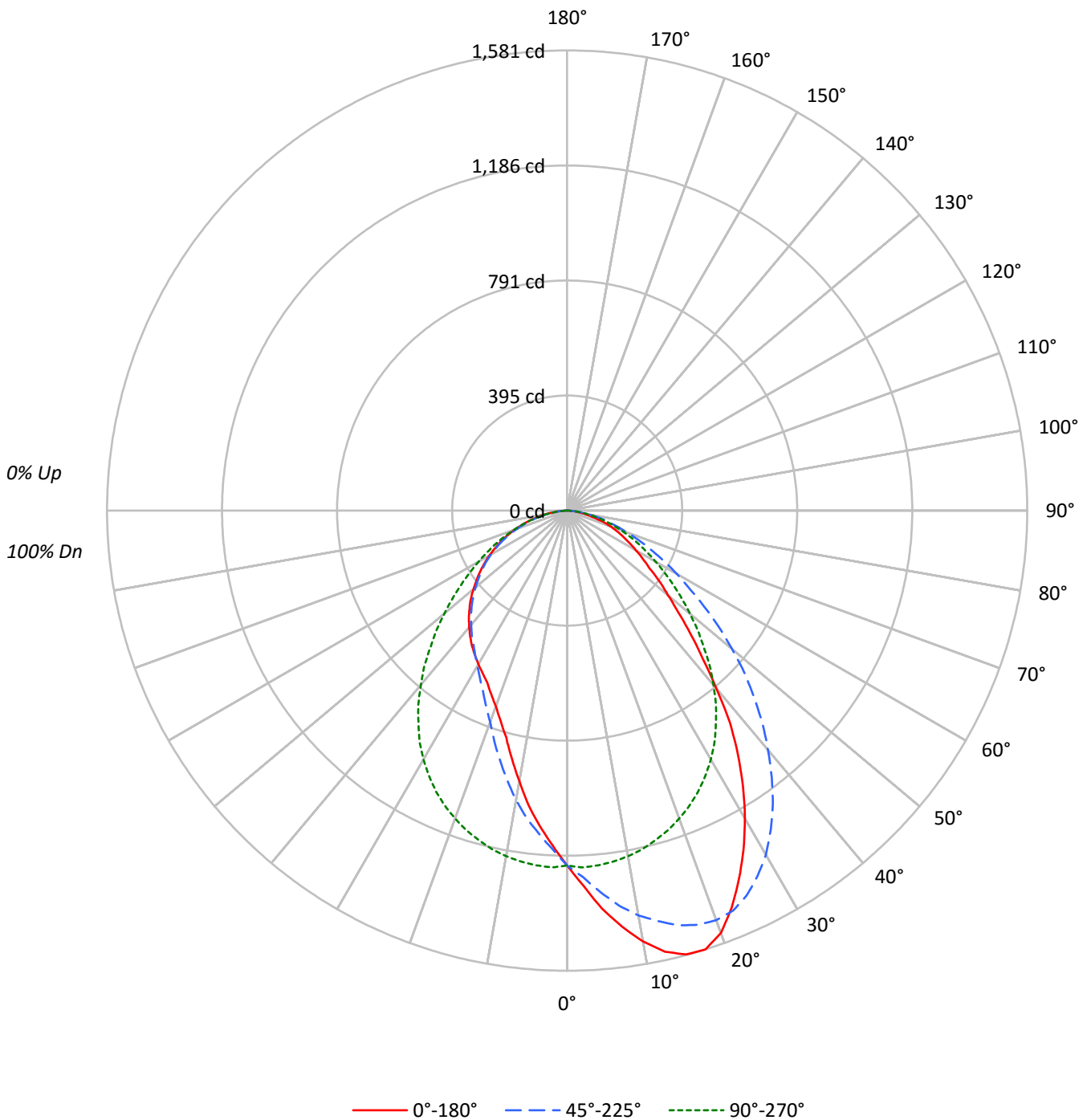
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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					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°	36130	36130	36130
5°	40822	36384	32325
10°	45223	36273	28417
15°	48427	35957	24785
20°	48694	35492	22567
25°	45675	34824	21280
30°	41785	33776	20860
35°	37003	32229	20596
40°	30835	30228	20241
45°	25137	27811	19870
50°	20863	25343	19369
55°	17853	22972	18865
60°	16172	20800	18270
65°	14933	18930	17619
70°	13774	17049	16581
75°	11127	15111	15283
80°	8873	12234	13070
85°	6663	9009	10675



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	116.5	4.1
10°-20°	333.7	11.8
20°-30°	485.9	17.2
30°-40°	541.7	19.2
40°-50°	500.8	17.7
50°-60°	399.0	14.1
60°-70°	273.1	9.7
70°-80°	141.8	5.0
80°-90°	33.6	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°	936.2	33.1
0°-40°	1477.9	52.3
0°-60°	2377.7	84.1
0°-90°	2826.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2826.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1219	1219	1219	1219	1219	
5°	1372	1316	1223	1114	1087	135
15°	1579	1475	1172	890	808	443
25°	1397	1459	1065	685	651	640
35°	1023	1232	891	561	569	635
45°	600	908	664	463	474	467
55°	346	573	445	356	365	316
65°	213	317	270	244	251	212
75°	97	142	132	125	134	107
85°	20	27	26	28	31	24
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°	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4
2.5°	1290.1	1290.1	1286.6	1288.1	1286.1	1282.7	1277.3	1271.4	1264.0	1261.1	1259.6
5°	1372.5	1374.5	1372.0	1367.1	1366.2	1362.2	1350.4	1343.6	1327.9	1315.6	1311.7
7.5°	1441.3	1444.7	1444.7	1435.9	1431.9	1422.1	1413.8	1402.5	1382.8	1369.1	1357.8
10°	1503.1	1504.6	1499.2	1494.3	1486.4	1478.6	1464.3	1450.1	1429.0	1412.3	1393.6
12.5°	1552.2	1555.1	1551.2	1543.4	1534.0	1523.7	1506.1	1487.9	1467.3	1444.7	1424.6
15°	1578.7	1583.1	1583.6	1577.2	1570.4	1558.1	1545.3	1525.7	1503.1	1475.1	1442.2
17.5°	1580.7	1582.6	1584.1	1579.2	1574.8	1570.4	1557.6	1541.4	1519.8	1492.3	1461.9
20°	1544.3	1548.8	1553.7	1549.3	1551.2	1551.2	1545.8	1537.5	1519.8	1497.7	1468.3
22.5°	1476.6	1486.9	1493.3	1497.7	1502.1	1508.5	1514.9	1511.0	1504.1	1487.9	1461.4
25°	1397.1	1405.4	1417.7	1421.6	1425.1	1443.7	1455.0	1462.9	1462.9	1459.4	1441.7
27.5°	1312.6	1318.0	1328.4	1342.1	1354.9	1366.2	1389.7	1404.4	1416.2	1416.2	1406.9
30°	1221.3	1229.2	1241.5	1250.8	1266.5	1289.6	1309.2	1326.9	1353.9	1365.7	1363.7
32.5°	1125.1	1133.0	1145.7	1153.6	1176.2	1194.8	1225.3	1252.8	1283.7	1301.4	1312.2
35°	1023.0	1023.5	1045.1	1057.9	1077.5	1100.6	1137.9	1168.8	1202.7	1232.1	1255.2
37.5°	918.0	917.5	932.7	955.3	971.0	1003.4	1041.7	1076.0	1123.2	1154.6	1190.9
40°	797.2	807.5	820.3	840.9	867.9	906.2	942.5	987.2	1034.3	1073.6	1112.4
42.5°	689.2	697.6	718.2	741.2	770.2	802.6	846.8	896.4	942.5	993.6	1036.8
45°	599.9	604.3	616.6	635.2	665.6	702.5	748.6	801.1	855.6	907.7	955.8
47.5°	517.4	530.7	537.0	554.2	576.3	610.7	658.8	705.9	768.7	826.7	879.2
50°	452.6	455.1	466.3	479.1	505.1	530.7	567.0	615.6	674.0	739.3	792.8
52.5°	399.6	398.6	407.9	419.2	437.4	464.4	495.8	542.9	592.5	657.3	715.7
55°	345.6	350.5	354.9	366.2	382.4	403.0	429.5	469.3	515.9	573.4	634.7
57.5°	308.3	308.8	311.2	320.6	331.4	347.6	373.1	406.9	448.7	498.7	558.1
60°	272.9	273.4	277.8	280.8	288.2	301.9	321.5	349.5	386.3	434.4	486.5
62.5°	242.5	243.0	245.4	248.4	255.3	260.7	277.4	301.4	331.4	374.1	418.7
65°	213.0	213.5	213.5	217.5	221.9	226.8	238.6	253.8	282.8	316.6	356.4
67.5°	184.6	187.5	186.5	189.5	193.4	195.9	204.2	218.0	237.6	266.1	300.4
70°	159.0	158.6	160.0	161.5	163.0	166.9	172.3	181.6	198.3	218.4	248.9
72.5°	131.6	128.6	130.6	132.5	135.0	137.9	142.4	149.2	162.0	178.2	200.8
75°	97.2	95.7	98.7	99.2	103.6	107.5	112.4	119.3	128.6	142.4	157.1
77.5°	70.7	72.7	73.6	74.6	75.1	79.5	84.9	90.8	96.2	109.0	120.3
80°	52.0	52.0	52.5	53.5	54.5	55.5	58.9	62.8	67.3	75.1	86.4
82.5°	36.3	35.8	35.8	36.3	36.8	37.8	39.3	40.7	44.7	48.6	54.5
85°	19.6	20.1	20.6	19.6	20.1	20.6	21.6	23.1	24.1	27.0	29.5
87.5°	6.9	8.3	7.9	7.9	8.3	8.3	8.3	9.3	9.3	9.3	10.8
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°	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4
2.5°	1258.2	1256.7	1252.8	1244.9	1239.5	1229.7	1227.7	1227.2	1218.4	1205.1	1204.2
5°	1304.8	1293.5	1284.2	1270.4	1256.7	1240.0	1230.2	1223.3	1207.6	1188.0	1179.1
7.5°	1347.5	1331.3	1312.2	1290.6	1270.4	1246.9	1229.7	1215.9	1192.9	1167.8	1152.6
10°	1381.9	1361.7	1337.7	1308.7	1281.2	1250.3	1226.2	1205.6	1175.2	1144.3	1123.7
12.5°	1405.4	1382.8	1355.4	1321.5	1288.1	1252.8	1217.9	1191.9	1153.6	1117.8	1091.3
15°	1431.9	1394.6	1366.2	1327.9	1288.6	1246.4	1209.6	1172.2	1128.1	1087.8	1053.5
17.5°	1438.3	1403.9	1370.1	1327.9	1287.1	1235.6	1192.9	1151.6	1102.5	1053.0	1019.6
20°	1444.2	1404.9	1363.2	1317.6	1274.8	1221.8	1173.7	1125.6	1068.7	1015.2	973.4
22.5°	1439.8	1401.5	1354.9	1303.3	1257.2	1202.7	1150.6	1097.6	1033.8	977.9	930.7
25°	1427.0	1391.7	1343.6	1287.1	1231.6	1176.2	1121.7	1065.2	996.0	931.2	879.2
27.5°	1401.0	1369.6	1323.4	1263.6	1205.1	1143.8	1086.8	1027.9	953.8	887.5	832.1
30°	1366.2	1341.1	1294.5	1234.6	1171.3	1105.5	1047.1	987.2	910.1	838.0	779.0
32.5°	1318.0	1300.4	1260.1	1201.7	1133.5	1063.8	1003.9	943.0	860.5	791.8	731.9
35°	1264.0	1255.7	1219.9	1161.4	1090.8	1017.6	953.3	891.0	814.9	742.2	684.8
37.5°	1200.7	1206.6	1174.2	1116.3	1043.1	968.5	900.8	840.4	763.3	693.6	637.2
40°	1137.9	1146.7	1122.2	1068.2	992.1	915.0	846.3	781.5	709.8	648.5	592.5
42.5°	1068.2	1085.9	1066.7	1014.2	940.1	858.6	786.9	726.5	658.3	601.8	552.7
45°	994.1	1016.6	1008.8	955.3	882.1	802.1	726.5	663.7	608.7	558.6	514.0
47.5°	918.9	945.0	941.5	896.9	826.7	744.7	670.1	608.2	557.7	517.4	480.1
50°	841.9	868.4	868.9	829.1	763.8	685.8	605.8	549.8	509.5	474.2	443.8
52.5°	766.8	793.3	793.8	762.8	697.6	621.5	547.8	496.8	462.4	434.9	409.4
55°	688.2	719.2	722.1	692.2	634.2	561.1	493.3	444.7	414.3	396.6	374.6
57.5°	608.7	642.1	648.0	623.9	568.0	499.7	442.8	396.1	371.6	359.3	342.6
60°	534.6	567.5	576.8	549.3	503.2	444.7	390.3	351.0	331.4	321.5	309.8
62.5°	466.3	499.2	504.1	480.6	434.9	385.8	344.6	308.8	292.6	285.2	275.9
65°	399.6	429.0	435.4	414.3	373.1	332.3	296.0	270.0	255.8	249.4	243.5
67.5°	338.2	365.7	370.1	351.0	316.6	281.8	255.3	232.7	222.9	214.5	212.1
70°	280.3	305.3	309.3	290.1	263.1	234.6	212.6	196.8	187.5	182.6	179.2
72.5°	226.8	246.4	249.9	238.1	217.0	191.9	174.8	161.5	155.6	151.2	149.7
75°	177.2	196.4	196.8	186.5	169.4	152.2	138.9	132.0	125.2	120.8	119.8
77.5°	136.0	146.8	148.2	142.8	126.2	115.4	105.1	100.1	97.7	93.3	93.3
80°	97.2	103.6	106.0	98.2	90.3	81.0	75.6	71.7	69.7	66.8	66.8
82.5°	60.4	65.8	68.7	62.8	58.9	54.0	50.1	47.6	46.1	44.7	44.2
85°	32.9	36.8	36.8	34.9	31.4	29.0	27.5	26.5	26.0	25.5	25.0
87.5°	11.8	14.7	13.3	13.7	12.3	11.8	11.3	11.3	11.8	10.8	10.8
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°	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4	1219.4
2.5°	1197.8	1195.3	1188.0	1181.1	1175.7	1163.9	1161.4	1162.4	1162.4	1162.9	1157.5
5°	1168.8	1158.5	1146.7	1135.9	1127.6	1114.3	1107.0	1105.0	1103.5	1100.6	1095.2
7.5°	1135.9	1124.1	1107.5	1097.6	1080.0	1065.2	1054.9	1048.1	1043.6	1037.3	1028.4
10°	1102.5	1085.4	1066.7	1047.1	1029.4	1009.8	993.6	985.7	976.4	970.0	960.2
12.5°	1069.2	1045.1	1019.6	997.0	972.9	949.9	933.2	922.4	905.7	896.4	886.1
15°	1025.5	996.0	974.4	935.1	923.4	890.0	869.9	861.5	845.3	842.4	826.2
17.5°	984.2	950.4	918.5	885.6	854.2	831.1	813.9	803.1	790.3	782.5	771.7
20°	932.7	897.3	859.1	824.7	798.2	773.6	762.8	749.1	741.7	733.9	726.0
22.5°	883.6	840.4	802.1	774.1	747.1	727.0	715.2	705.9	699.5	691.7	686.3
25°	831.1	790.8	755.5	726.5	700.5	684.8	675.0	669.6	665.6	659.8	656.3
27.5°	781.0	740.3	705.4	683.3	662.2	648.5	643.6	638.6	633.7	631.8	631.3
30°	727.5	690.2	661.7	642.6	623.4	616.1	613.6	608.7	609.7	610.2	608.7
32.5°	682.3	646.0	624.4	608.2	593.5	588.1	587.6	585.6	586.1	588.6	587.6
35°	635.7	608.7	587.1	573.9	564.5	560.6	561.1	561.6	564.5	565.0	567.0
37.5°	595.9	569.9	555.7	542.9	538.5	538.5	539.0	539.5	541.9	544.9	545.9
40°	556.7	535.6	523.3	514.9	512.5	512.5	514.5	516.9	518.4	521.3	521.8
42.5°	521.3	503.7	494.3	486.0	487.0	489.4	489.9	491.4	495.3	495.8	496.8
45°	486.5	473.2	463.9	461.4	461.4	463.4	465.9	466.8	469.8	470.3	471.3
47.5°	456.5	442.8	435.9	433.5	434.9	437.4	440.8	442.3	444.7	444.3	446.7
50°	423.1	411.9	406.5	405.5	406.5	410.9	412.3	415.8	418.2	419.7	420.7
52.5°	391.2	382.4	380.0	379.5	381.4	384.4	386.3	389.8	392.7	392.7	392.2
55°	360.8	353.0	350.0	352.5	354.9	356.4	360.3	362.3	365.2	365.7	365.2
57.5°	329.9	323.0	322.0	323.0	327.9	330.9	333.3	333.3	334.8	335.3	336.8
60°	298.0	293.6	292.6	295.0	300.4	302.4	303.9	304.4	306.3	305.3	308.3
62.5°	268.0	263.6	265.6	268.0	270.0	272.9	273.9	276.4	275.9	276.9	278.3
65°	237.1	234.6	235.1	238.1	240.5	244.5	244.5	244.5	246.9	246.9	247.9
67.5°	207.2	205.7	207.6	210.1	210.6	213.0	212.6	215.5	217.5	218.4	219.4
70°	178.2	177.2	177.2	179.7	182.1	183.1	184.1	186.0	186.5	188.0	190.5
72.5°	150.7	147.8	148.2	151.7	151.7	153.6	156.1	156.1	159.0	159.5	162.0
75°	120.8	119.8	120.8	122.7	125.2	124.7	127.6	127.1	128.1	131.6	132.0
77.5°	94.3	92.8	95.2	96.2	96.7	97.2	98.2	100.6	102.6	104.1	104.6
80°	67.7	67.3	69.7	70.7	70.2	71.2	72.7	75.1	75.1	76.1	77.6
82.5°	45.7	44.7	46.1	47.6	48.6	49.1	49.1	50.1	50.6	51.5	51.5
85°	26.0	26.0	27.0	27.5	28.5	28.0	29.0	28.5	29.5	30.4	29.9
87.5°	11.3	11.3	11.3	11.3	11.8	11.8	12.3	12.3	11.8	12.3	11.3
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: P242995

CATALOG NUMBER: S121DR-H880D930-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1219.4	1219.4	1219.4	1219.4
2.5°	1155.6	1156.5	1154.1	1151.6
5°	1094.7	1091.3	1087.8	1086.8
7.5°	1026.5	1026.5	1018.1	1020.1
10°	953.3	950.4	944.0	944.5
12.5°	882.1	879.7	876.2	874.8
15°	817.8	819.3	821.8	808.0
17.5°	767.3	763.3	761.4	758.9
20°	722.1	720.1	716.2	715.7
22.5°	687.2	682.8	681.8	682.3
25°	653.9	653.9	653.9	650.9
27.5°	630.3	630.3	628.8	629.3
30°	609.7	610.7	609.2	609.7
32.5°	590.1	590.5	589.6	589.1
35°	568.0	569.4	568.9	569.4
37.5°	546.9	547.8	546.9	546.9
40°	522.8	525.3	524.8	523.3
42.5°	498.7	498.7	500.2	499.7
45°	473.7	472.7	472.7	474.2
47.5°	447.2	449.2	448.2	448.7
50°	422.7	422.2	420.7	420.2
52.5°	393.7	394.7	394.2	391.7
55°	365.7	365.7	365.2	365.2
57.5°	335.8	337.2	336.8	336.8
60°	307.3	308.3	308.8	308.3
62.5°	278.3	278.8	278.3	278.8
65°	250.4	250.4	249.9	251.3
67.5°	219.9	220.4	219.9	220.9
70°	191.0	191.9	192.4	191.4
72.5°	163.5	162.5	163.0	162.0
75°	133.0	133.5	133.0	133.5
77.5°	104.6	105.1	104.6	105.1
80°	77.1	77.1	77.6	76.6
82.5°	52.0	52.0	53.5	52.0
85°	30.4	30.4	29.5	31.4
87.5°	11.8	11.8	11.8	11.8
90°	0.0	0.0	0.0	0.0

(END OF REPORT)