

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: P242140

Luminaire Tested: **S121DR-S880D935-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242140  
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-S880D935-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: 3144.1 lumens  
Efficiency: N/A  
Efficacy: 90.3 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

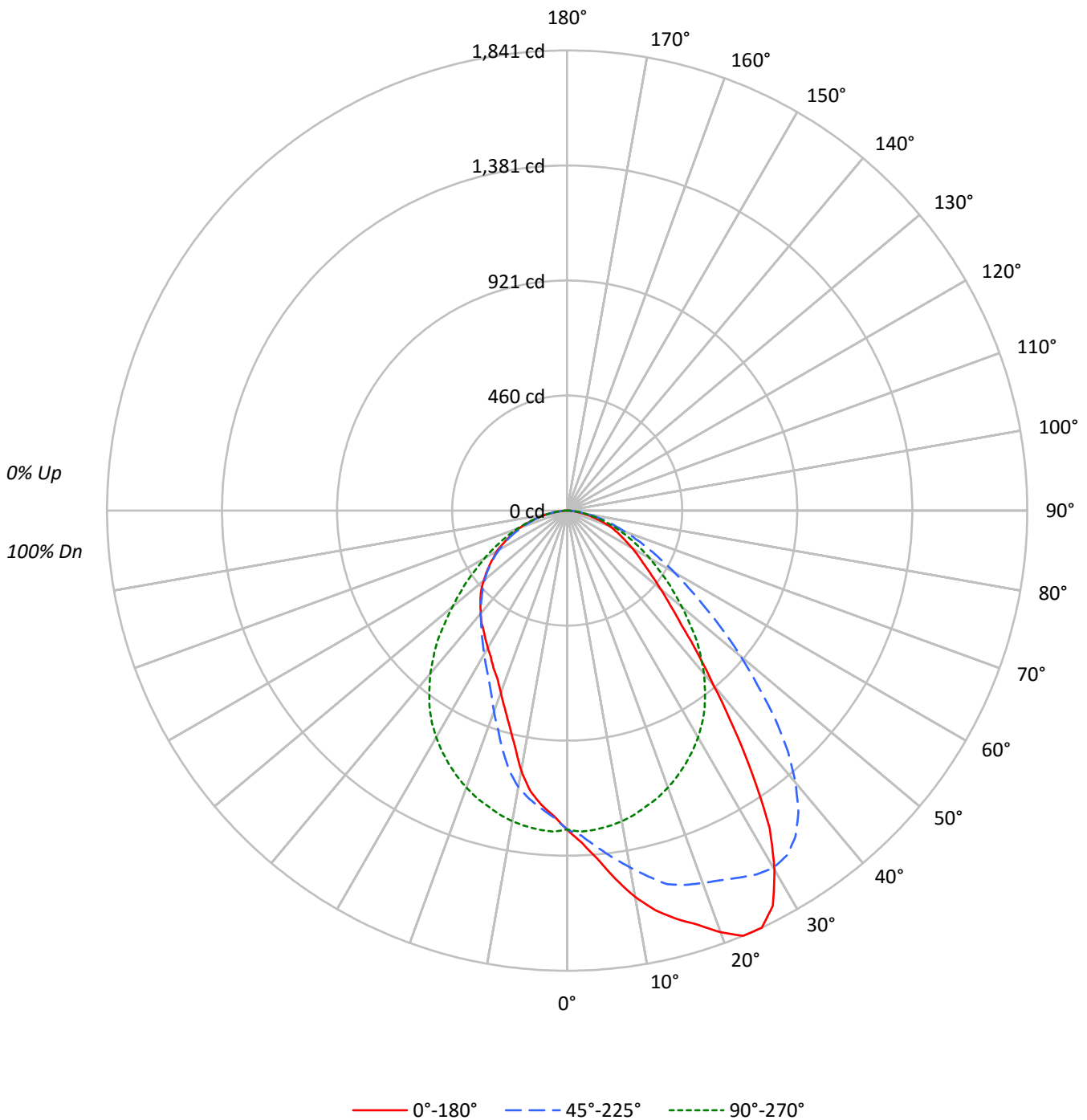
Input Watts (W): 34.8  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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°	37805	37805	37805
5°	41607	38113	35141
10°	47242	37976	31781
15°	51871	37555	27316
20°	56608	37185	24443
25°	60200	36596	22757
30°	56764	35839	21715
35°	46907	34713	21088
40°	35167	32916	20809
45°	27098	30690	20566
50°	22472	27611	20093
55°	19398	25070	19511
60°	17831	22613	19259
65°	16476	20437	18165
70°	15602	18357	17404
75°	12822	16210	15466
80°	10118	13207	12746
85°	7853	9689	8601



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	122.7	3.9
10°-20°	357.9	11.4
20°-30°	548.0	17.4
30°-40°	625.3	19.9
40°-50°	561.0	17.8
50°-60°	440.1	14.0
60°-70°	299.4	9.5
70°-80°	154.2	4.9
80°-90°	35.5	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°	1028.5	32.7
0°-40°	1653.8	52.6
0°-60°	2655.0	84.4
0°-90°	3144.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3144.1	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1276	1276	1276	1276	1276	
5°	1399	1350	1281	1196	1182	139
15°	1691	1548	1224	994	890	481
25°	1841	1621	1119	743	696	831
35°	1297	1592	960	596	583	804
45°	647	1175	732	483	491	513
55°	376	670	485	373	378	342
65°	235	357	292	255	259	234
75°	112	157	142	130	135	121
85°	23	31	28	27	25	28
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°	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9
2.5°	1329.7	1329.7	1331.9	1331.4	1329.2	1325.3	1322.0	1318.2	1308.3	1301.7	1307.7
5°	1398.9	1401.6	1404.4	1403.8	1395.6	1388.4	1378.0	1375.3	1357.7	1349.5	1346.7
7.5°	1486.7	1486.2	1487.3	1477.9	1470.8	1463.7	1449.9	1432.9	1412.1	1400.5	1389.5
10°	1570.2	1575.1	1572.9	1561.4	1550.4	1542.7	1520.8	1499.9	1474.1	1449.4	1435.7
12.5°	1638.2	1635.5	1644.8	1633.9	1620.7	1606.4	1585.0	1566.3	1532.8	1499.3	1471.3
15°	1691.0	1688.2	1689.3	1681.1	1667.3	1654.7	1632.8	1613.0	1581.1	1547.7	1518.0
17.5°	1737.1	1739.8	1734.9	1725.0	1706.3	1691.5	1664.1	1637.1	1603.7	1570.2	1541.1
20°	1795.3	1798.0	1788.7	1774.4	1756.3	1731.0	1702.5	1664.1	1626.7	1585.5	1549.3
22.5°	1841.4	1839.7	1836.4	1822.7	1803.5	1779.9	1738.7	1696.4	1652.0	1600.9	1554.2
25°	1841.4	1843.6	1845.2	1838.1	1825.5	1805.7	1777.7	1733.2	1683.3	1620.7	1555.3
27.5°	1782.1	1792.0	1799.1	1799.1	1796.4	1795.8	1779.3	1751.3	1704.7	1641.5	1569.1
30°	1659.1	1672.3	1683.3	1700.3	1720.6	1733.8	1738.7	1727.7	1703.6	1650.3	1575.1
32.5°	1507.6	1506.5	1529.0	1556.4	1596.5	1624.5	1652.5	1669.0	1667.9	1636.1	1573.5
35°	1296.8	1312.1	1339.0	1377.5	1429.1	1475.2	1536.1	1568.0	1593.2	1592.1	1552.1
37.5°	1091.4	1093.6	1123.8	1176.5	1222.1	1293.5	1373.1	1439.5	1500.4	1520.2	1507.0
40°	909.2	924.5	944.8	988.8	1034.3	1096.9	1197.9	1286.9	1362.1	1420.3	1436.2
42.5°	768.6	776.8	796.6	835.0	875.7	950.3	1024.5	1119.4	1214.4	1307.2	1355.0
45°	646.7	654.4	672.5	699.4	737.3	796.1	872.4	964.6	1066.2	1174.9	1243.0
47.5°	557.8	560.5	574.3	594.6	630.3	673.1	734.6	824.1	926.7	1032.7	1132.6
50°	487.5	491.9	501.2	517.2	543.5	583.6	632.5	700.0	795.0	904.8	1006.3
52.5°	426.0	429.3	440.3	449.1	469.4	503.4	545.7	607.2	687.4	786.2	891.0
55°	375.5	378.8	384.3	394.2	410.1	433.2	469.4	518.3	586.9	670.3	768.6
57.5°	337.1	338.7	339.8	346.4	359.1	377.7	408.5	446.9	500.1	576.5	663.8
60°	300.9	300.3	304.7	309.6	317.3	328.9	351.4	386.0	433.7	495.8	577.0
62.5°	264.6	267.4	270.1	274.0	278.9	285.5	303.6	329.4	367.3	420.5	487.5
65°	235.0	235.5	237.7	238.3	244.3	250.9	264.6	282.2	313.5	356.9	412.3
67.5°	206.4	207.0	206.4	208.1	210.8	216.3	223.4	237.7	261.9	297.0	345.3
70°	180.1	178.4	176.2	179.0	181.7	184.5	189.4	200.4	218.5	244.9	284.9
72.5°	144.9	146.0	147.1	148.2	148.8	152.6	157.0	164.7	179.0	199.3	230.0
75°	112.0	112.0	113.6	114.7	119.7	120.8	125.7	131.2	142.7	157.0	181.2
77.5°	82.4	81.8	84.5	85.1	87.8	91.1	93.9	99.4	108.2	120.2	136.2
80°	59.3	59.8	59.3	59.3	60.9	63.1	67.0	69.7	75.8	83.4	95.0
82.5°	39.5	39.5	40.1	40.1	41.7	41.7	43.9	46.1	50.0	54.9	63.1
85°	23.1	23.1	22.5	22.5	23.1	23.1	25.3	26.9	27.5	30.7	33.5
87.5°	9.9	9.9	9.3	9.9	9.3	9.9	9.3	10.4	11.0	11.5	12.6
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°	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9
2.5°	1306.1	1304.4	1303.9	1297.9	1291.8	1284.7	1283.6	1285.8	1276.4	1264.9	1264.4
5°	1340.1	1334.1	1325.3	1313.8	1303.9	1290.7	1284.1	1281.4	1267.1	1250.6	1247.4
7.5°	1378.0	1363.2	1347.3	1329.7	1312.1	1292.9	1280.8	1273.7	1253.9	1233.6	1225.4
10°	1414.3	1395.0	1370.9	1344.0	1319.3	1292.9	1274.8	1262.2	1238.0	1212.8	1200.1
12.5°	1456.0	1424.1	1390.1	1356.6	1326.4	1292.4	1264.9	1245.7	1217.7	1190.8	1172.1
15°	1486.2	1440.1	1413.7	1365.9	1328.1	1286.9	1253.4	1224.3	1193.5	1163.9	1145.2
17.5°	1509.8	1473.5	1427.4	1374.7	1323.7	1279.2	1237.5	1205.1	1164.5	1132.1	1111.7
20°	1517.5	1480.7	1433.5	1375.8	1324.8	1267.7	1218.3	1179.3	1135.9	1096.4	1068.4
22.5°	1514.7	1473.0	1424.7	1368.1	1316.5	1249.0	1197.4	1150.7	1102.4	1060.1	1021.7
25°	1508.7	1460.4	1407.1	1353.9	1296.2	1229.8	1170.5	1119.4	1061.2	1015.1	969.0
27.5°	1505.4	1442.3	1382.4	1324.8	1269.9	1205.6	1141.9	1084.8	1020.6	964.6	905.3
30°	1504.3	1429.1	1353.9	1286.9	1236.4	1171.0	1107.9	1047.5	972.3	909.2	848.8
32.5°	1502.1	1418.1	1329.7	1249.5	1191.9	1133.2	1066.2	1006.3	921.2	855.4	790.6
35°	1487.3	1398.9	1301.7	1210.6	1143.0	1082.1	1022.3	959.7	871.3	800.5	738.4
37.5°	1455.4	1378.0	1274.3	1171.6	1090.9	1028.8	973.4	905.3	819.7	742.3	684.6
40°	1408.2	1345.1	1244.6	1133.2	1038.2	970.1	911.4	851.0	762.6	688.5	636.3
42.5°	1346.7	1297.9	1203.4	1088.1	987.1	910.8	851.0	791.1	709.9	638.5	591.8
45°	1266.0	1235.8	1152.9	1039.3	937.7	849.3	784.5	732.4	657.2	591.8	549.0
47.5°	1176.5	1163.4	1094.2	984.9	877.9	792.2	716.5	661.6	602.8	547.4	509.5
50°	1068.4	1078.8	1024.5	924.0	820.2	732.4	658.3	599.0	547.9	505.1	471.6
52.5°	967.4	992.1	948.1	852.6	759.8	668.7	594.0	539.7	499.6	464.5	435.4
55°	854.8	890.5	864.1	781.8	689.6	608.9	534.2	485.3	450.7	423.8	399.1
57.5°	746.7	797.2	777.9	703.8	625.3	546.8	476.5	428.2	403.5	383.8	362.9
60°	650.6	696.7	693.9	630.8	552.3	482.6	424.9	381.6	359.6	346.4	328.3
62.5°	564.4	611.0	606.7	549.6	487.5	422.7	373.9	334.3	318.4	304.2	292.6
65°	476.5	516.6	518.8	476.5	416.7	364.5	322.8	291.5	277.3	268.5	260.2
67.5°	396.9	435.9	439.8	406.3	353.6	308.5	277.3	250.9	238.3	230.6	224.5
70°	327.2	359.1	366.2	338.2	293.7	258.6	232.2	211.9	203.7	196.0	193.8
72.5°	265.2	291.0	295.9	270.1	237.2	210.8	190.5	175.1	169.1	161.4	159.8
75°	210.8	228.9	229.5	212.5	187.8	167.4	151.0	141.6	135.1	129.6	128.5
77.5°	153.2	169.1	174.0	161.4	141.1	124.1	114.7	107.6	103.2	100.5	99.9
80°	110.9	121.3	123.5	112.5	100.5	90.0	83.4	77.4	74.7	71.9	70.8
82.5°	69.2	78.5	79.1	71.4	65.3	58.2	52.7	50.5	48.9	47.2	47.2
85°	37.3	42.3	41.7	38.4	35.7	31.8	29.6	28.5	27.5	26.4	26.4
87.5°	14.3	15.9	15.9	16.5	14.3	12.6	11.5	12.1	11.5	11.5	11.5
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°	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9	1275.9
2.5°	1260.5	1258.3	1252.8	1244.1	1239.1	1228.1	1228.7	1230.9	1231.4	1229.8	1229.2
5°	1238.0	1231.4	1222.6	1211.7	1204.0	1195.7	1190.3	1193.5	1191.9	1191.4	1188.6
7.5°	1213.3	1204.5	1193.5	1182.6	1173.8	1162.8	1158.4	1154.6	1150.2	1149.6	1147.4
10°	1188.6	1177.6	1165.0	1149.1	1137.0	1123.3	1110.1	1103.0	1094.7	1088.7	1076.1
12.5°	1159.5	1140.8	1126.6	1110.1	1088.1	1066.2	1051.4	1031.0	1020.1	1009.1	994.3
15°	1126.0	1101.9	1077.2	1044.2	1025.0	994.3	972.3	957.5	940.5	929.5	916.8
17.5°	1078.3	1053.0	1021.7	984.4	950.3	919.0	903.1	883.9	876.8	852.6	850.4
20°	1031.0	993.2	954.2	916.3	878.4	855.9	835.6	823.0	809.8	794.4	789.5
22.5°	977.8	928.4	887.2	852.1	817.5	792.8	782.9	768.6	756.0	747.2	739.0
25°	913.0	867.4	825.7	792.8	761.5	742.8	730.2	719.8	714.3	704.4	701.1
27.5°	853.2	807.6	774.1	743.4	718.1	701.6	690.7	681.3	674.2	672.5	668.7
30°	792.2	753.2	721.4	695.0	672.5	663.8	653.3	648.9	644.5	642.3	638.0
32.5°	737.3	702.7	674.7	649.5	636.3	628.1	622.6	618.2	614.9	613.8	612.7
35°	687.4	655.5	632.5	614.3	604.5	595.7	592.9	589.1	587.4	586.9	586.3
37.5°	643.4	613.8	596.2	580.3	573.2	564.9	565.5	563.8	562.7	559.4	561.6
40°	599.0	575.9	557.8	545.2	540.2	537.5	536.4	535.3	535.8	535.8	535.3
42.5°	558.3	538.0	526.5	514.4	512.2	510.0	510.0	508.4	508.9	511.7	512.8
45°	521.6	505.6	495.2	485.3	485.3	482.6	484.8	484.2	485.9	487.5	488.6
47.5°	484.8	470.5	462.8	457.9	455.7	455.7	457.3	460.1	461.2	461.7	462.8
50°	448.0	437.6	431.0	428.2	427.7	430.4	432.1	431.5	433.2	435.4	437.0
52.5°	415.6	406.3	401.9	400.8	400.8	403.0	403.5	405.2	406.3	406.3	408.5
55°	382.1	375.5	372.2	371.7	372.2	373.3	375.5	376.6	376.1	377.2	377.2
57.5°	348.6	343.7	342.0	343.7	343.7	345.9	345.9	345.9	345.3	347.5	347.0
60°	317.3	311.8	313.5	312.9	314.6	314.6	316.2	316.2	314.6	316.8	317.9
62.5°	286.0	284.9	282.7	282.7	284.4	284.9	283.3	284.9	285.5	287.1	288.2
65°	253.1	249.3	250.9	250.3	252.0	254.7	252.5	252.5	254.2	256.4	257.5
67.5°	221.8	218.5	220.2	220.7	220.7	221.8	220.2	221.3	223.4	226.2	227.8
70°	190.0	188.9	189.4	188.9	188.9	191.6	192.2	191.6	193.8	196.5	197.1
72.5°	157.6	158.7	157.6	158.7	159.8	158.1	158.7	160.3	162.5	164.2	166.9
75°	127.9	126.3	126.8	129.6	129.0	130.1	129.6	131.2	135.1	134.0	134.5
77.5°	98.8	98.3	98.8	99.4	99.9	101.6	101.0	103.8	104.3	104.9	106.0
80°	70.3	70.8	71.4	72.5	74.1	73.6	74.7	75.2	77.4	75.2	76.9
82.5°	47.8	47.2	48.3	48.3	50.0	51.1	49.4	49.4	49.4	48.9	48.9
85°	26.4	28.0	28.0	28.0	26.9	26.9	27.5	26.9	26.9	26.9	26.4
87.5°	11.5	11.5	11.0	10.4	11.0	10.4	10.4	9.9	9.3	9.3	8.8
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: P242140

CATALOG NUMBER: S121DR-S880D935-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1275.9	1275.9	1275.9	1275.9
2.5°	1225.9	1228.7	1225.4	1223.2
5°	1185.9	1185.9	1182.6	1181.5
7.5°	1140.8	1141.4	1135.4	1131.0
10°	1073.3	1070.0	1061.2	1056.3
12.5°	983.3	988.2	975.0	965.2
15°	904.8	891.0	896.5	890.5
17.5°	838.9	834.5	828.5	829.0
20°	781.2	777.9	774.7	775.2
22.5°	735.7	732.9	731.8	728.0
25°	697.8	698.9	696.1	696.1
27.5°	666.5	664.9	663.2	661.0
30°	636.9	637.4	635.8	634.7
32.5°	610.5	611.0	610.0	608.3
35°	584.7	584.1	584.7	583.0
37.5°	561.1	560.5	561.1	563.3
40°	536.9	537.5	535.8	538.0
42.5°	513.3	513.9	513.9	512.8
45°	487.5	489.2	489.7	490.8
47.5°	462.3	465.0	463.9	464.5
50°	437.0	436.5	436.5	435.9
52.5°	409.0	407.4	406.8	407.4
55°	375.5	377.7	377.7	377.7
57.5°	348.1	348.6	350.3	348.1
60°	320.1	320.1	320.6	325.0
62.5°	288.8	289.3	290.4	291.0
65°	258.6	260.2	259.7	259.1
67.5°	228.9	228.9	229.5	228.4
70°	198.2	198.2	198.2	200.9
72.5°	166.4	166.4	166.9	168.0
75°	136.7	136.7	136.7	135.1
77.5°	104.3	104.9	104.9	105.4
80°	75.8	75.2	75.2	74.7
82.5°	47.8	48.3	47.8	47.2
85°	26.4	26.9	25.3	25.3
87.5°	9.3	9.3	8.8	9.9
90°	0.0	0.0	0.0	0.0

(END OF REPORT)