

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: P242631

Luminaire Tested: **S124DR-S1020D927-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242631  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-21)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S124DR-S1020D927-X4F0-XX-UDD-A-W  
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 2700K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3364.7 lumens  
Efficiency: N/A  
Efficacy: 96.7 lumens/watt  
Spacing Criteria (0/90/45): 1.3 / 1.22 / 1.41  
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')  
CIE Type: Direct

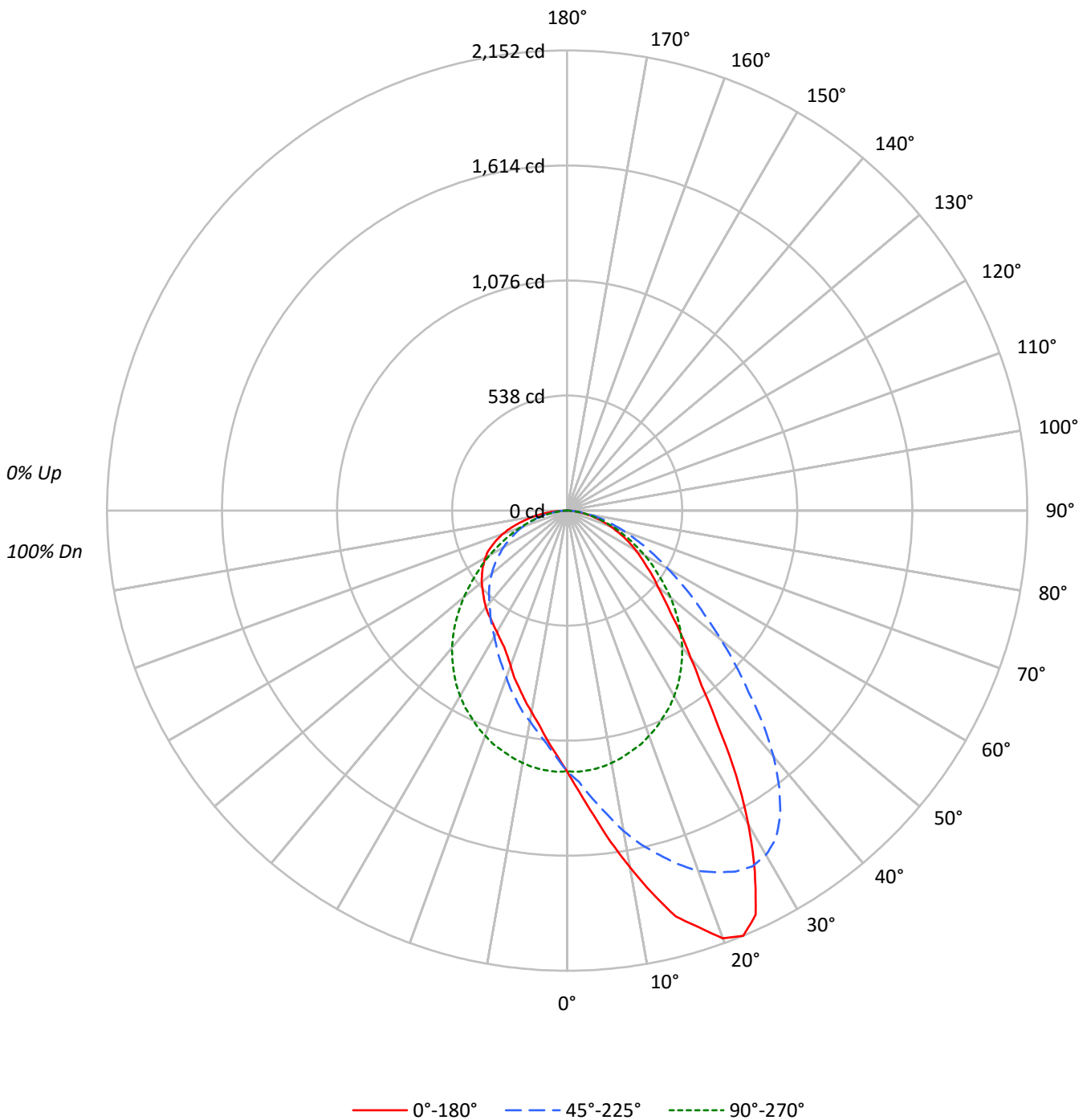
Input Watts (W): 34.8  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P242631

CATALOG NUMBER: S124DR-S1020D927-X4F0-XX-UDD-A-W

### Luminous Intensity Polar Plot





TEST NUMBER: P242631

CATALOG NUMBER: S124DR-S1020D927-X4F0-XX-UDD-A-W

**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	109	105	101	97	107	103	99	96	98	95	93	95	92	90	91	89	87	85					85			
2	100	92	86	80	98	90	84	79	87	82	78	84	79	76	81	77	74	72					72			
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	67	64	62					62			
4	84	73	64	58	82	72	64	58	69	62	57	67	61	56	65	60	55	53					53			
5	78	65	57	50	76	64	56	50	62	55	50	60	54	49	58	53	49	46					46			
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	47	43	41					41			
7	67	54	45	39	65	53	45	39	52	44	39	50	44	39	49	43	38	36					36			
8	62	49	41	35	61	49	41	35	47	40	35	46	40	35	45	39	35	33					33			
9	58	45	37	32	57	45	37	32	44	37	32	43	36	32	42	36	31	30					30			
10	55	42	34	29	54	41	34	29	40	34	29	39	33	29	39	33	29	27					27			

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

	0°	90°	180°
0°	10839	10839	10839
5°	12764	10866	9591
10°	15283	10819	8635
15°	18082	10710	7930
20°	20135	10597	7301
25°	20460	10434	6866
30°	17410	10275	6729
35°	13385	10020	6731
40°	10433	9718	6858
45°	8699	9265	6972
50°	7656	8711	7209
55°	7014	8048	7499
60°	6572	7452	7849
65°	6118	6789	8138
70°	5593	6131	8322
75°	4997	5395	8222
80°	4187	4423	7965
85°	3090	3192	7629



TEST NUMBER: P242631

CATALOG NUMBER: S124DR-S1020D927-X4F0-XX-UDD-A-W

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	118.7	3.5
10°-20°	366.3	10.9
20°-30°	581.9	17.3
30°-40°	646.6	19.2
40°-50°	588.0	17.5
50°-60°	480.5	14.3
60°-70°	343.0	10.2
70°-80°	188.7	5.6
80°-90°	51.0	1.5
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°	1066.9	31.7
0°-40°	1713.4	50.9
0°-60°	2782.0	82.7
0°-90°	3364.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3364.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1219	1219	1219	1219	1219	
5°	1430	1351	1218	1095	1075	145
15°	1965	1667	1164	917	862	555
25°	2086	1862	1064	754	700	925
35°	1234	1737	923	623	620	781
45°	692	1199	737	516	555	544
55°	453	722	519	404	484	409
65°	291	402	323	280	387	288
75°	146	187	157	156	239	154
85°	30	39	31	44	75	37
90°	0	0	0	0	0	



TEST NUMBER: P242631

CATALOG NUMBER: S124DR-S1020D927-X4F0-XX-UDD-A-W

**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°	1317.3	1316.8	1311.8	1310.8	1307.2	1302.7	1301.7	1293.6	1277.4	1269.9	1267.8
5°	1430.5	1440.6	1427.5	1424.9	1423.4	1406.8	1398.2	1388.1	1364.8	1351.2	1340.6
7.5°	1562.8	1563.3	1557.8	1552.2	1542.6	1528.5	1509.3	1487.1	1460.3	1433.0	1413.8
10°	1693.2	1697.2	1690.6	1689.6	1663.9	1647.7	1615.4	1588.1	1556.8	1521.9	1490.1
12.5°	1830.5	1822.5	1819.9	1793.2	1793.7	1760.8	1721.9	1693.7	1641.1	1599.7	1554.7
15°	1964.9	1953.8	1946.7	1916.9	1902.3	1861.4	1821.5	1790.6	1727.5	1667.4	1621.9
17.5°	2042.7	2056.3	2038.1	2026.0	1986.1	1959.3	1919.4	1856.3	1809.3	1734.6	1682.5
20°	2128.6	2129.6	2120.5	2107.9	2078.1	2041.7	1997.2	1926.5	1867.4	1793.2	1714.4
22.5°	2151.8	2151.8	2149.3	2137.7	2116.9	2089.2	2044.2	1988.1	1913.4	1831.0	1752.3
25°	2086.1	2084.1	2088.7	2101.8	2093.2	2084.1	2058.4	2014.4	1947.7	1862.4	1777.5
27.5°	1900.2	1913.4	1940.7	1973.0	1996.2	2016.9	2015.4	1996.7	1949.2	1875.5	1785.1
30°	1696.2	1713.4	1732.6	1764.9	1827.5	1863.4	1902.8	1932.6	1915.9	1859.8	1777.0
32.5°	1471.9	1472.9	1503.7	1541.6	1597.7	1675.0	1743.2	1811.3	1840.6	1817.9	1752.3
35°	1233.5	1240.6	1271.4	1307.7	1378.0	1462.3	1556.3	1640.1	1709.3	1737.1	1701.7
37.5°	1033.5	1055.7	1078.9	1120.3	1184.5	1260.8	1361.8	1466.4	1567.9	1629.5	1636.1
40°	899.1	911.7	927.4	957.2	1009.7	1084.5	1168.3	1292.6	1402.2	1501.2	1533.5
42.5°	793.0	799.1	807.2	833.4	870.3	944.6	1019.3	1124.9	1235.0	1358.3	1417.9
45°	692.0	699.6	715.8	731.4	761.7	813.2	884.5	974.4	1085.0	1199.1	1299.2
47.5°	616.2	621.3	631.4	648.6	675.8	710.7	771.3	847.6	955.7	1066.3	1173.4
50°	553.6	557.6	565.2	580.4	600.1	630.4	677.9	748.1	828.4	940.0	1044.6
52.5°	504.1	505.1	510.2	519.3	533.9	558.2	595.0	650.1	723.3	819.8	923.9
55°	452.6	454.6	459.7	467.2	480.9	497.0	526.8	570.3	635.4	721.8	812.2
57.5°	410.2	412.2	416.2	419.2	431.4	445.0	469.3	500.6	551.6	628.4	710.7
60°	369.7	368.7	373.8	376.3	383.9	395.0	412.7	442.5	485.4	544.5	618.8
62.5°	330.3	328.8	332.9	336.4	339.9	349.0	362.7	384.4	417.2	469.3	530.9
65°	290.9	288.9	291.5	295.5	299.5	304.6	315.2	335.9	363.7	402.1	451.1
67.5°	250.5	253.1	253.1	255.6	258.1	265.2	272.8	288.9	308.6	339.9	383.4
70°	215.2	215.7	217.7	217.7	219.2	225.3	231.3	239.9	259.1	287.4	321.3
72.5°	179.8	182.3	180.8	182.9	183.9	187.4	191.4	199.5	215.2	234.4	261.7
75°	145.5	147.0	147.0	147.5	149.0	150.5	154.1	160.1	171.7	187.4	207.1
77.5°	112.1	112.1	113.1	115.2	115.2	117.7	120.7	125.3	131.8	143.5	156.1
80°	81.8	82.8	82.3	83.3	83.3	85.4	86.4	92.4	95.0	102.0	111.6
82.5°	54.6	55.6	55.6	57.1	58.1	58.1	59.6	61.1	63.6	69.7	72.2
85°	30.3	31.3	30.3	31.3	32.8	33.3	34.9	35.4	37.4	38.9	42.4
87.5°	11.1	12.6	12.6	13.1	14.1	14.6	15.2	14.6	16.7	17.2	19.2
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: P242631

CATALOG NUMBER: S124DR-S1020D927-X4F0-XX-UDD-A-W

**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°	1268.3	1261.3	1256.2	1252.2	1241.1	1234.5	1229.5	1222.4	1214.3	1205.7	1195.1
5°	1330.0	1312.8	1300.2	1281.0	1262.8	1247.6	1232.0	1217.8	1200.7	1182.0	1168.3
7.5°	1393.1	1369.4	1337.5	1312.8	1283.0	1257.2	1234.5	1210.8	1185.5	1161.3	1138.5
10°	1452.7	1419.9	1383.5	1340.6	1300.2	1264.3	1231.0	1198.6	1167.3	1136.0	1109.2
12.5°	1516.9	1473.9	1415.8	1363.8	1317.3	1266.3	1224.4	1183.0	1143.6	1110.2	1077.9
15°	1572.9	1513.8	1451.7	1384.5	1324.9	1268.9	1213.8	1163.8	1121.4	1077.9	1047.6
17.5°	1608.3	1535.1	1468.4	1398.2	1329.5	1259.3	1202.2	1146.1	1093.6	1051.1	1013.3
20°	1643.1	1570.4	1482.0	1411.8	1325.9	1253.2	1184.5	1120.3	1064.8	1018.8	979.4
22.5°	1673.5	1586.6	1498.2	1400.2	1314.8	1236.5	1159.7	1095.1	1038.0	989.0	951.6
25°	1680.5	1584.0	1488.1	1396.1	1299.2	1207.7	1139.5	1063.8	1003.2	952.1	911.7
27.5°	1683.0	1581.0	1474.4	1374.4	1274.4	1191.1	1102.2	1036.0	973.4	919.3	880.9
30°	1677.5	1569.9	1453.2	1342.6	1242.1	1149.6	1074.9	1001.1	937.0	883.4	843.0
32.5°	1659.8	1546.7	1425.9	1307.2	1202.2	1112.3	1034.5	965.3	903.1	850.6	807.7
35°	1622.4	1511.8	1384.0	1262.3	1155.7	1064.3	994.6	923.4	860.7	810.7	769.8
37.5°	1572.4	1469.4	1339.6	1212.8	1110.2	1017.3	947.1	881.4	824.9	773.3	730.9
40°	1502.7	1414.8	1284.5	1161.8	1048.6	961.2	896.6	837.5	781.4	733.4	693.5
42.5°	1422.4	1348.7	1231.0	1099.1	991.0	903.1	840.5	789.0	737.0	693.5	653.6
45°	1323.9	1273.4	1160.3	1040.0	926.4	843.5	783.4	737.0	692.5	649.1	615.7
47.5°	1214.3	1186.0	1087.5	972.3	863.2	780.4	728.4	683.9	643.5	605.6	575.8
50°	1103.7	1091.6	1009.2	899.1	796.1	719.3	666.8	629.9	596.5	564.2	536.4
52.5°	994.6	997.1	924.9	826.4	732.9	659.7	607.7	573.8	546.0	521.3	497.0
55°	882.9	897.1	839.0	749.1	663.7	597.0	550.1	519.3	499.1	477.3	458.6
57.5°	780.4	804.1	753.6	671.3	599.1	535.4	494.0	470.3	448.0	433.9	419.2
60°	680.4	702.6	665.2	598.6	531.4	478.9	440.0	419.2	400.6	391.5	381.9
62.5°	591.5	610.7	585.4	524.8	468.7	418.7	387.4	367.7	356.6	346.5	341.0
65°	507.6	524.3	500.6	455.6	405.6	365.2	338.4	322.8	310.6	306.6	299.5
67.5°	424.8	440.0	427.3	387.9	345.5	313.7	292.5	275.8	268.7	264.7	260.1
70°	352.6	367.7	354.1	320.7	289.9	264.2	244.5	235.9	228.3	226.8	219.7
72.5°	291.5	300.5	286.9	262.7	237.4	216.7	202.6	193.5	190.4	187.4	184.4
75°	227.8	236.9	227.8	207.6	188.9	173.8	160.6	157.1	152.5	151.0	148.5
77.5°	170.7	179.3	172.2	158.6	144.0	131.3	123.8	118.7	118.2	115.2	116.2
80°	123.2	128.3	121.7	113.1	102.0	94.0	88.9	86.4	83.3	82.3	84.4
82.5°	79.8	81.3	78.8	73.7	66.2	61.6	58.6	55.6	55.6	56.1	55.6
85°	46.0	45.5	45.0	39.9	37.4	33.8	31.8	31.3	30.8	31.8	32.8
87.5°	19.2	19.7	19.2	17.2	15.7	14.1	13.6	13.1	13.6	14.1	14.6
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: P242631

CATALOG NUMBER: S124DR-S1020D927-X4F0-XX-UDD-A-W

**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°	1190.1	1185.5	1178.9	1169.9	1162.3	1154.2	1152.2	1149.1	1155.2	1150.2	1148.6
5°	1156.7	1146.1	1132.5	1116.8	1107.7	1094.6	1092.1	1087.0	1082.0	1081.5	1076.4
7.5°	1121.9	1107.2	1090.0	1073.9	1059.7	1045.6	1036.5	1035.5	1027.4	1023.4	1018.3
10°	1088.5	1069.3	1048.6	1033.5	1016.3	1001.1	990.5	984.5	979.4	973.9	968.8
12.5°	1049.1	1028.4	1012.3	995.6	974.4	963.8	944.6	933.0	933.0	934.5	919.3
15°	1020.3	1000.1	973.9	950.6	939.5	917.3	907.7	895.6	888.0	880.4	874.4
17.5°	985.0	960.2	940.0	913.8	893.0	876.4	863.2	856.7	844.6	833.4	825.9
20°	952.1	925.4	903.7	875.4	852.1	830.4	819.8	809.7	801.1	792.0	783.4
22.5°	918.8	890.5	862.7	835.5	814.2	791.0	780.9	766.3	758.2	754.1	745.6
25°	883.4	853.1	822.8	796.6	774.3	754.1	740.5	729.9	720.8	716.8	711.2
27.5°	845.1	815.3	786.5	756.2	730.4	715.8	704.6	696.1	690.5	684.4	681.9
30°	808.7	777.4	746.1	718.3	695.0	680.4	670.3	664.7	660.7	658.2	655.6
32.5°	771.8	741.0	707.7	682.9	662.7	650.1	643.0	637.5	635.9	635.4	634.9
35°	731.9	700.6	670.3	647.6	627.9	622.8	616.2	613.2	612.2	615.7	617.3
37.5°	693.5	664.2	635.9	613.2	600.1	592.0	589.5	589.0	592.5	595.5	599.1
40°	656.7	628.4	602.1	582.9	570.8	566.2	565.2	567.8	571.8	575.3	579.4
42.5°	620.8	593.0	569.8	552.1	544.5	540.5	541.5	544.0	550.1	554.6	561.2
45°	583.4	560.2	536.9	522.3	515.2	516.2	516.2	520.8	526.3	532.9	539.5
47.5°	548.6	524.8	505.1	492.5	489.0	487.4	490.0	496.0	503.6	511.2	520.3
50°	513.2	491.0	474.3	463.2	459.2	460.7	464.7	470.3	479.9	490.0	499.6
52.5°	477.3	457.6	442.5	432.4	429.9	432.9	436.9	446.5	454.6	465.7	477.8
55°	440.0	422.8	410.7	403.1	402.1	403.6	408.1	417.7	429.9	443.5	454.6
57.5°	403.1	388.4	376.8	371.3	371.8	372.8	379.8	391.5	403.6	418.2	432.4
60°	365.7	352.6	343.5	339.4	339.9	343.0	352.1	362.7	378.8	393.0	408.1
62.5°	330.3	319.2	310.6	307.1	306.1	313.7	322.3	333.4	349.5	365.7	382.4
65°	292.0	282.9	275.8	273.8	275.3	280.3	291.5	306.1	319.7	336.4	353.6
67.5°	254.6	247.0	242.0	243.0	244.5	251.5	261.1	273.8	288.9	306.1	323.8
70°	219.2	212.1	208.1	208.6	211.6	220.7	228.8	241.4	258.1	275.8	289.9
72.5°	182.9	178.8	175.3	177.8	180.8	186.4	197.0	209.6	223.8	239.9	255.1
75°	146.0	146.0	144.0	145.5	150.0	156.1	163.7	176.8	191.4	204.6	216.7
77.5°	114.7	113.1	114.2	115.7	118.7	126.3	134.9	144.5	156.1	169.7	179.8
80°	82.8	83.3	85.9	88.9	89.9	95.5	104.6	113.1	121.7	132.8	142.4
82.5°	57.1	57.6	58.6	62.6	63.6	69.7	74.8	83.3	90.9	97.5	105.1
85°	33.8	33.8	36.4	37.9	40.4	44.5	48.0	53.0	60.1	65.2	72.7
87.5°	16.2	16.2	18.2	19.2	20.7	23.2	24.2	29.8	31.8	34.3	38.9
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: P242631

CATALOG NUMBER: S124DR-S1020D927-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1219.4	1219.4	1219.4	1219.4
2.5°	1147.6	1146.6	1143.1	1142.6
5°	1073.4	1070.8	1069.3	1074.9
7.5°	1017.3	1015.3	1010.7	1009.2
10°	963.8	961.7	957.7	956.7
12.5°	912.2	907.7	907.7	909.2
15°	867.8	865.8	860.2	861.7
17.5°	822.3	820.3	812.7	820.3
20°	779.9	775.9	772.3	771.8
22.5°	739.5	736.0	736.5	732.4
25°	707.2	703.6	702.6	700.1
27.5°	680.9	678.9	676.9	677.9
30°	657.2	656.7	655.6	655.6
32.5°	637.5	637.5	638.5	638.5
35°	619.3	620.8	621.8	620.3
37.5°	603.1	604.1	605.6	607.2
40°	583.9	587.5	588.5	591.0
42.5°	565.7	569.8	572.8	572.8
45°	547.0	551.1	554.6	554.6
47.5°	527.8	533.4	536.9	537.4
50°	508.1	515.2	518.8	521.3
52.5°	489.0	496.0	501.1	502.1
55°	466.2	476.3	481.9	483.9
57.5°	446.0	455.1	461.2	462.7
60°	421.8	431.9	440.0	441.5
62.5°	397.0	407.6	414.7	419.2
65°	367.7	378.3	385.4	386.9
67.5°	336.9	348.0	352.6	355.6
70°	304.1	312.7	317.7	320.2
72.5°	266.7	275.8	281.9	281.9
75°	228.3	236.4	239.4	239.4
77.5°	188.4	193.0	197.0	198.0
80°	150.0	152.5	155.6	155.6
82.5°	110.6	112.6	115.7	115.2
85°	71.7	76.3	75.8	74.8
87.5°	40.4	40.9	42.4	43.4
90°	0.0	0.0	0.0	0.0

(END OF REPORT)