

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: P243501

Luminaire Tested: **S124DR-H1020D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243501
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-60)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S124DR-H1020D835-X4F0-XX-UDD-A-W
Description: DEFINE 4 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: 4229.5 lumens
Efficiency: N/A
Efficacy: 134.3 lumens/watt
Spacing Criteria (0/90/45): 1.35 / 1.22 / 1.45
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')
CIE Type: Direct

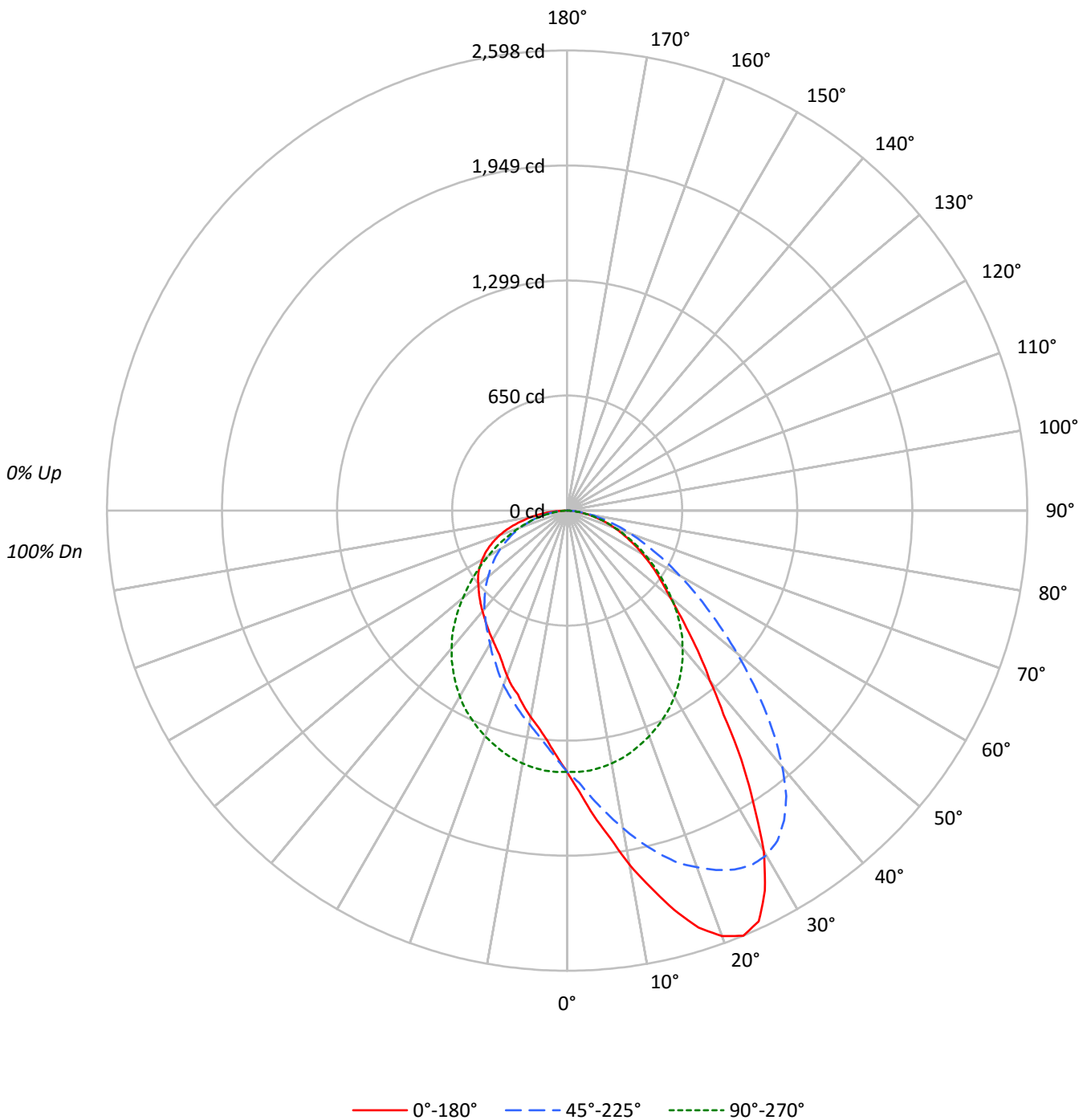
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P243501

CATALOG NUMBER: S124DR-H1020D835-X4F0-XX-UDD-A-W

Luminous Intensity Polar Plot





TEST NUMBER: P243501

CATALOG NUMBER: S124DR-H1020D835-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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	101	97	107	103	99	96	98	95	93	94	92	90	91	89	87	85
2	100	92	86	80	97	90	84	79	87	82	77	83	79	76	80	77	74	72
3	92	81	74	67	89	80	73	67	77	71	66	74	69	64	72	67	63	61
4	84	73	64	58	82	71	63	57	69	62	56	66	60	56	64	59	55	53
5	78	65	56	50	75	64	56	50	62	55	49	60	54	49	58	53	48	46
6	72	59	50	44	70	58	50	44	56	49	43	54	48	43	53	47	43	41
7	67	53	45	39	65	53	45	39	51	44	38	50	43	38	48	42	38	36
8	62	49	41	35	61	48	40	35	47	40	35	46	39	34	44	39	34	32
9	58	45	37	31	57	44	37	31	43	36	31	42	36	31	41	35	31	29
10	54	41	34	29	53	41	34	28	40	33	28	39	33	28	38	32	28	26

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	13111	13111	13111
5°	15429	13145	11603
10°	18335	13085	10683
15°	21474	12970	9895
20°	24181	12819	9386
25°	25095	12648	8834
30°	22790	12433	8639
35°	18593	12138	8585
40°	14559	11758	8620
45°	12185	11285	8779
50°	10457	10623	9041
55°	9554	9909	9480
60°	8756	9173	9826
65°	8028	8396	10207
70°	7386	7573	10515
75°	6577	6659	10502
80°	5487	5457	10478
85°	4171	4110	9822



TEST NUMBER: P243501

CATALOG NUMBER: S124DR-H1020D835-X4F0-XX-UDD-A-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	143.6	3.4
10°-20°	444.7	10.5
20°-30°	714.4	16.9
30°-40°	816.6	19.3
40°-50°	751.7	17.8
50°-60°	614.9	14.5
60°-70°	438.2	10.4
70°-80°	240.8	5.7
80°-90°	64.7	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°	1302.6	30.8
0°-40°	2119.2	50.1
0°-60°	3485.8	82.4
0°-90°	4229.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4229.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1475	1475	1475	1475	1475	
5°	1729	1630	1473	1332	1300	174
15°	2334	2005	1409	1134	1075	665
25°	2559	2237	1290	954	901	1148
35°	1713	2135	1119	796	791	1065
45°	969	1573	898	656	698	757
55°	616	967	639	511	612	553
65°	382	536	399	358	485	381
75°	192	247	194	198	306	205
85°	41	51	40	55	96	49
90°	0	0	0	0	0	



TEST NUMBER: P243501

CATALOG NUMBER: S124DR-H1020D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0
2.5°	1588.2	1583.4	1581.0	1578.0	1577.4	1574.4	1568.3	1559.9	1549.1	1537.6	1537.6
5°	1729.1	1727.9	1718.9	1719.5	1708.0	1695.4	1685.7	1673.7	1650.2	1630.4	1616.5
7.5°	1863.9	1876.6	1873.6	1863.9	1847.1	1829.0	1809.8	1792.9	1749.6	1725.5	1705.6
10°	2031.3	2036.1	2027.7	2013.9	1998.8	1963.9	1938.6	1910.3	1863.3	1822.4	1786.3
12.5°	2178.2	2189.7	2174.6	2161.4	2125.8	2100.0	2074.7	2018.1	1968.7	1916.9	1864.5
15°	2333.5	2321.5	2329.3	2296.8	2271.5	2246.9	2182.4	2124.6	2068.6	2004.8	1950.0
17.5°	2468.4	2468.4	2454.0	2432.9	2406.4	2360.0	2295.6	2231.8	2169.8	2086.1	2008.4
20°	2556.3	2562.9	2546.1	2523.8	2491.9	2443.7	2392.5	2323.3	2240.8	2143.3	2055.4
22.5°	2598.4	2599.7	2593.6	2575.0	2549.1	2508.1	2455.8	2388.3	2301.0	2196.3	2104.2
25°	2558.7	2565.3	2563.5	2562.3	2549.1	2525.6	2483.5	2420.8	2341.4	2236.6	2137.3
27.5°	2419.0	2435.3	2449.1	2455.2	2469.6	2470.8	2458.2	2420.2	2355.2	2256.5	2145.7
30°	2220.4	2211.9	2249.3	2267.9	2317.3	2346.8	2367.9	2365.5	2328.1	2248.1	2142.7
32.5°	1955.5	1978.3	2004.8	2048.8	2107.2	2175.8	2227.6	2266.1	2262.5	2210.1	2122.2
35°	1713.4	1713.4	1747.1	1801.3	1863.3	1945.8	2032.5	2104.2	2148.1	2134.9	2072.9
37.5°	1450.9	1467.2	1505.7	1547.9	1623.7	1703.2	1817.6	1912.7	2004.8	2032.5	2000.6
40°	1254.7	1261.9	1302.8	1338.4	1416.0	1498.5	1594.2	1715.8	1821.8	1889.8	1894.1
42.5°	1109.0	1108.4	1125.2	1157.1	1219.8	1293.2	1396.8	1516.0	1640.0	1736.3	1781.5
45°	969.3	968.1	985.6	1018.1	1062.6	1127.6	1217.3	1336.6	1463.6	1573.2	1644.2
47.5°	851.3	862.1	870.0	895.2	932.0	987.4	1064.4	1159.5	1281.8	1404.6	1500.3
50°	756.2	761.0	777.8	789.9	830.8	869.4	931.4	1016.9	1121.6	1250.5	1354.0
52.5°	680.3	683.3	693.6	709.2	732.7	766.4	815.8	894.6	989.2	1101.1	1208.3
55°	616.5	614.7	621.3	631.6	652.0	680.3	716.4	776.6	859.1	966.9	1065.6
57.5°	553.9	553.9	559.9	567.1	578.6	602.1	637.6	685.1	751.4	847.1	934.4
60°	492.5	496.7	499.1	506.3	516.0	533.4	559.9	597.2	653.2	731.5	818.2
62.5°	438.3	438.3	442.5	444.9	457.6	470.2	489.5	521.4	565.3	635.2	702.6
65°	381.7	385.3	385.3	390.1	401.0	410.6	425.6	449.7	485.9	535.8	599.0
67.5°	333.5	333.5	336.5	339.0	345.0	351.6	364.8	383.5	414.2	453.9	511.1
70°	284.2	286.0	284.8	287.8	291.4	298.0	307.6	323.3	345.6	379.9	422.0
72.5°	239.6	237.2	238.4	241.4	243.2	247.4	253.5	265.5	283.6	311.3	342.0
75°	191.5	190.2	194.5	193.3	196.3	199.9	205.3	214.3	228.2	247.4	270.9
77.5°	149.3	147.5	149.3	150.5	151.7	154.7	158.9	164.4	174.0	186.6	207.7
80°	107.2	106.6	107.8	109.0	109.6	114.4	115.6	121.0	125.2	134.9	145.1
82.5°	71.0	72.2	72.8	74.1	73.5	75.9	77.1	80.7	84.3	89.1	96.9
85°	40.9	39.1	40.9	40.9	40.9	43.9	43.3	45.8	48.2	50.6	56.0
87.5°	14.4	14.4	15.1	15.7	15.7	17.5	16.9	18.1	20.5	20.5	22.3
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: P243501

CATALOG NUMBER: S124DR-H1020D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0
2.5°	1534.0	1527.4	1522.6	1508.7	1500.3	1492.5	1485.3	1477.4	1469.0	1458.2	1451.5
5°	1602.1	1587.6	1566.5	1547.3	1525.6	1506.3	1490.7	1473.2	1454.0	1434.1	1416.6
7.5°	1677.3	1650.2	1617.7	1582.2	1548.5	1520.2	1490.7	1463.0	1435.9	1409.4	1384.7
10°	1752.6	1705.6	1662.9	1614.1	1569.5	1526.8	1488.3	1449.7	1416.0	1381.1	1349.8
12.5°	1822.4	1765.8	1703.2	1642.4	1582.8	1527.4	1479.8	1432.9	1389.5	1348.0	1311.3
15°	1876.0	1804.9	1730.9	1658.6	1590.0	1532.2	1470.2	1409.4	1364.2	1313.7	1273.3
17.5°	1937.4	1853.1	1779.7	1693.0	1607.5	1514.2	1448.5	1382.3	1328.1	1279.4	1239.0
20°	1978.3	1885.6	1779.7	1681.5	1593.6	1509.9	1431.1	1355.2	1298.0	1241.4	1192.7
22.5°	2010.8	1915.1	1798.3	1696.0	1585.8	1484.7	1399.2	1324.5	1257.1	1203.5	1157.1
25°	2027.7	1910.9	1799.5	1675.5	1565.3	1468.4	1372.1	1289.6	1221.6	1162.0	1122.2
27.5°	2028.3	1908.5	1776.7	1653.8	1535.8	1431.1	1335.9	1254.7	1178.2	1121.0	1073.5
30°	2025.3	1892.8	1753.8	1619.5	1502.1	1395.0	1295.6	1211.3	1141.5	1080.7	1035.5
32.5°	2006.0	1871.2	1719.5	1578.6	1450.9	1343.2	1251.7	1168.0	1093.3	1037.9	990.4
35°	1962.7	1823.6	1671.3	1526.2	1405.2	1293.2	1202.9	1118.6	1051.8	991.6	942.8
37.5°	1907.3	1777.3	1622.5	1470.8	1340.2	1234.2	1149.3	1069.8	1000.0	944.6	895.9
40°	1837.5	1715.2	1562.9	1405.2	1274.5	1167.4	1087.3	1013.3	953.6	897.1	849.5
42.5°	1741.7	1647.8	1491.3	1337.8	1201.1	1099.9	1022.3	960.9	899.5	848.3	800.7
45°	1639.4	1553.9	1414.8	1262.5	1131.3	1027.1	954.2	897.7	845.3	793.5	755.0
47.5°	1526.2	1456.4	1327.5	1178.8	1049.4	957.3	885.6	835.0	786.9	747.1	708.6
50°	1391.3	1354.6	1234.2	1099.3	973.5	879.0	820.0	768.2	732.7	694.2	658.0
52.5°	1266.1	1236.6	1138.5	1006.0	891.6	808.6	745.3	704.4	669.5	641.2	612.3
55°	1130.0	1115.0	1031.9	917.5	814.0	730.9	676.7	639.4	611.7	585.2	564.1
57.5°	1004.8	1003.6	930.2	832.0	730.9	660.4	608.7	578.0	553.9	535.2	517.2
60°	876.6	886.8	826.6	736.9	656.8	590.6	543.7	516.0	499.7	482.2	467.2
62.5°	760.4	776.0	721.3	650.8	571.9	517.8	481.6	460.6	442.5	429.9	418.4
65°	649.0	668.9	624.3	561.1	500.9	449.7	419.0	399.2	385.3	378.1	370.3
67.5°	550.9	561.7	531.6	482.2	432.3	387.7	362.4	345.0	332.9	329.9	320.9
70°	452.7	465.4	444.3	399.2	360.6	328.1	305.2	291.4	284.2	280.0	273.9
72.5°	373.9	379.3	358.2	326.9	296.2	269.1	252.3	242.0	233.6	231.8	228.8
75°	292.6	300.4	283.6	259.5	234.2	214.9	202.3	193.9	189.6	186.6	186.6
77.5°	221.0	227.6	217.9	196.9	181.8	165.0	156.5	148.7	146.9	143.9	145.1
80°	157.1	160.1	154.7	140.3	127.0	118.0	110.8	106.6	106.0	103.6	106.0
82.5°	104.2	104.8	98.7	92.1	81.9	77.1	72.2	70.4	69.8	69.8	68.6
85°	57.8	59.0	54.8	50.6	47.0	42.7	41.5	40.3	39.1	40.9	42.1
87.5°	22.3	22.9	22.3	20.5	19.3	18.1	17.5	18.7	16.9	18.1	18.7
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: P243501

CATALOG NUMBER: S124DR-H1020D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0	1475.0
2.5°	1441.3	1436.5	1429.3	1417.2	1408.8	1399.8	1396.2	1397.4	1393.7	1388.9	1390.1
5°	1403.4	1389.5	1377.5	1360.6	1345.0	1331.7	1327.5	1322.1	1317.3	1314.3	1311.3
7.5°	1363.0	1343.8	1325.7	1308.9	1290.8	1273.9	1267.3	1262.5	1260.1	1251.7	1248.1
10°	1324.5	1302.2	1280.6	1260.7	1242.0	1223.4	1216.7	1210.7	1202.3	1198.7	1194.5
12.5°	1283.6	1261.3	1237.8	1213.7	1195.1	1180.0	1168.6	1164.4	1155.9	1152.3	1149.9
15°	1243.8	1216.7	1198.1	1179.4	1151.1	1134.3	1129.4	1114.4	1109.6	1102.4	1097.5
17.5°	1204.1	1178.8	1151.1	1129.4	1112.0	1090.9	1079.5	1072.9	1063.8	1057.2	1048.2
20°	1165.0	1135.5	1113.8	1086.7	1067.4	1048.2	1033.7	1027.7	1019.9	1010.8	998.2
22.5°	1127.0	1094.5	1073.5	1048.2	1024.1	1001.8	989.8	981.3	965.7	963.9	952.4
25°	1082.5	1053.6	1025.9	999.4	975.9	953.6	945.8	932.6	927.2	916.3	914.5
27.5°	1040.3	1009.6	979.5	950.6	930.2	914.5	900.7	892.2	886.8	878.4	879.0
30°	996.4	962.7	934.4	907.9	885.6	870.6	861.5	857.3	849.5	848.3	844.1
32.5°	949.4	918.7	889.2	865.7	842.9	829.6	825.4	821.2	816.4	817.0	815.8
35°	902.5	875.4	844.1	822.4	803.7	795.9	789.3	788.1	786.3	787.5	787.5
37.5°	856.7	827.2	801.3	781.5	770.6	759.8	756.8	756.2	756.8	758.0	761.0
40°	812.2	785.1	759.8	743.5	731.5	726.7	722.5	724.3	726.7	730.9	734.5
42.5°	767.6	741.7	720.7	704.4	693.0	690.6	691.2	694.8	695.4	701.4	708.0
45°	720.7	698.4	678.5	665.9	658.6	655.6	656.8	660.4	664.7	673.1	681.5
47.5°	677.3	657.4	640.0	627.3	621.9	620.7	623.1	627.9	637.6	646.0	655.6
50°	633.4	615.3	599.0	587.6	587.0	582.8	588.2	594.2	605.7	617.1	631.6
52.5°	590.0	572.5	558.7	549.7	547.3	547.3	553.9	564.7	575.0	590.0	603.3
55°	544.9	529.2	516.0	512.9	509.3	511.1	518.4	529.2	543.7	560.5	575.0
57.5°	498.5	485.3	475.6	471.4	469.6	475.6	484.0	495.5	514.2	531.0	546.7
60°	454.5	443.1	432.9	431.7	430.5	438.3	448.5	460.6	479.2	496.1	515.4
62.5°	407.6	398.6	391.9	390.1	390.1	398.0	409.4	425.0	442.5	460.6	481.0
65°	360.0	352.2	350.4	348.0	353.4	358.2	369.7	384.7	403.4	423.2	444.9
67.5°	316.1	311.3	307.6	307.6	311.9	320.9	331.1	346.2	365.4	386.5	405.8
70°	272.1	267.3	264.3	267.3	269.7	280.6	291.4	305.8	323.9	344.4	364.8
72.5°	226.4	227.0	227.6	227.0	229.4	239.6	250.5	264.3	281.8	301.6	320.3
75°	186.0	183.0	183.6	184.8	192.7	198.1	208.9	222.2	240.8	258.9	274.5
77.5°	144.5	143.3	146.3	146.3	153.5	160.1	169.2	182.4	198.7	214.9	227.6
80°	106.0	106.6	109.0	109.6	115.6	122.8	132.5	141.5	155.9	167.4	179.4
82.5°	71.6	72.8	75.9	80.1	82.5	86.7	95.1	104.8	115.0	127.0	134.3
85°	41.5	43.3	45.8	48.8	51.2	55.4	61.4	69.2	76.5	83.1	89.1
87.5°	20.5	20.5	22.3	23.5	25.3	27.7	31.9	34.9	39.7	44.6	47.0
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: P243501

CATALOG NUMBER: S124DR-H1020D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1475.0	1475.0	1475.0	1475.0
2.5°	1387.7	1387.1	1384.7	1385.9
5°	1309.5	1303.4	1302.8	1300.4
7.5°	1242.0	1240.2	1240.2	1235.4
10°	1190.3	1184.8	1186.0	1183.6
12.5°	1140.9	1137.9	1134.3	1130.7
15°	1085.5	1085.5	1085.5	1075.3
17.5°	1042.1	1041.5	1038.5	1037.9
20°	997.0	994.6	986.8	992.2
22.5°	951.2	949.4	942.8	944.0
25°	908.5	906.7	905.5	900.7
27.5°	871.8	872.4	873.6	870.6
30°	844.1	842.3	844.7	841.7
32.5°	818.2	818.2	815.8	816.4
35°	788.7	791.1	791.7	791.1
37.5°	762.8	765.8	768.2	765.8
40°	738.7	741.1	743.5	742.9
42.5°	713.4	717.6	719.5	721.3
45°	689.3	694.8	697.8	698.4
47.5°	664.7	671.3	677.3	676.7
50°	640.6	649.0	654.4	653.8
52.5°	616.5	624.9	631.6	634.6
55°	589.4	600.2	606.3	611.7
57.5°	562.3	574.4	580.4	582.8
60°	532.2	543.0	550.9	552.7
62.5°	498.5	509.9	520.2	522.6
65°	463.6	476.2	484.0	485.3
67.5°	423.2	435.3	443.1	446.7
70°	381.7	390.7	399.2	404.6
72.5°	335.3	346.2	354.0	357.6
75°	287.2	299.2	303.4	305.8
77.5°	237.2	244.4	251.1	251.7
80°	187.2	196.3	198.7	204.7
82.5°	137.9	146.3	144.5	146.9
85°	90.9	93.9	95.7	96.3
87.5°	48.2	50.0	51.2	51.8
90°	0.0	0.0	0.0	0.0

(END OF REPORT)