

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: P243507

Luminaire Tested: **S124DR-H1195D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243507
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-H1195D840-X4F0-XX-UDD-A-W
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4989.6 lumens
Efficiency: N/A
Efficacy: 132.3 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

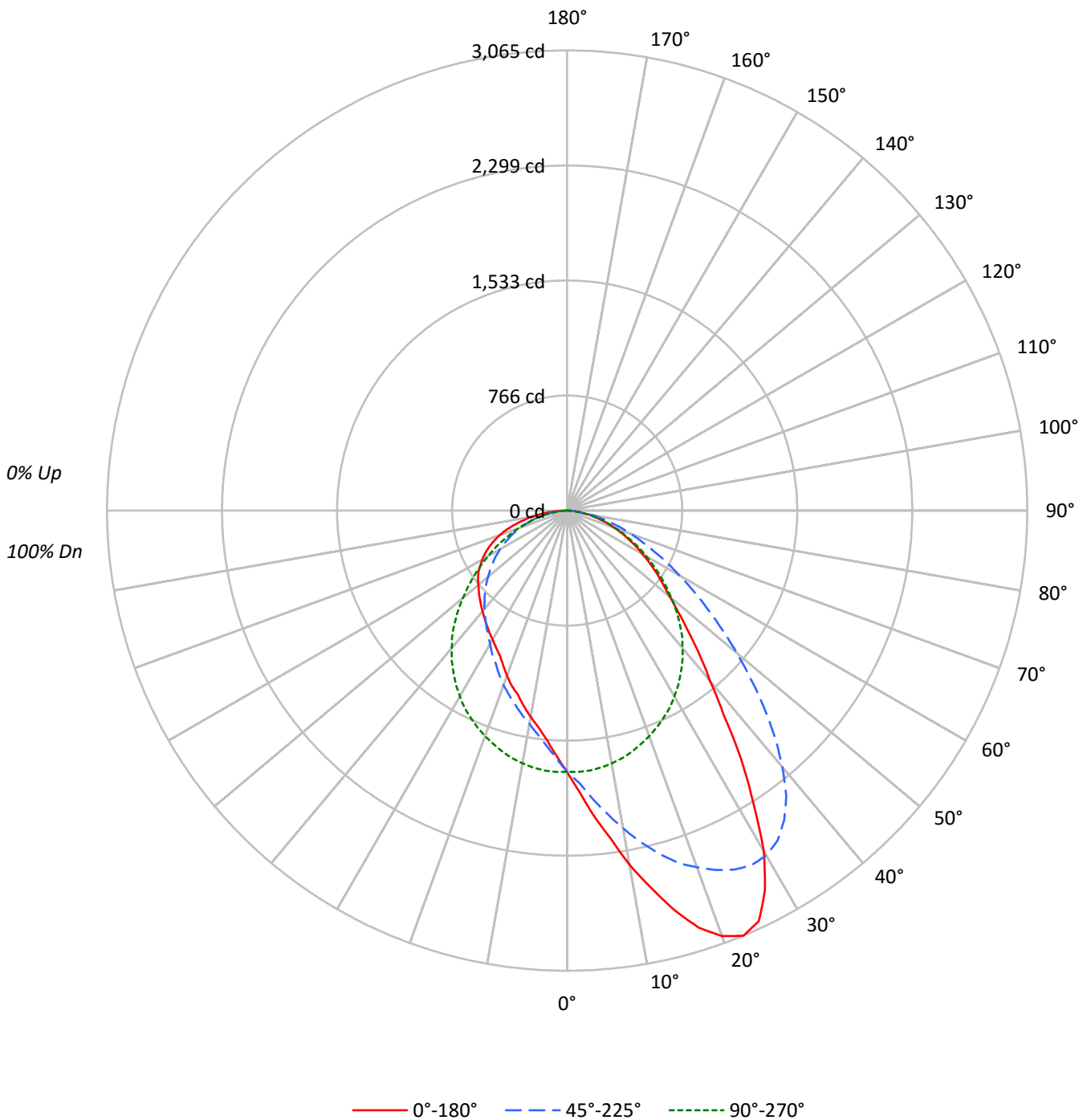
Input Watts (W): 37.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	15468	15468	15468
5°	18201	15508	13689
10°	21630	15437	12603
15°	25333	15301	11673
20°	28527	15124	11072
25°	29606	14921	10421
30°	26886	14667	10191
35°	21935	14319	10128
40°	17176	13870	10169
45°	14375	13312	10357
50°	12337	12533	10666
55°	11271	11690	11183
60°	10329	10821	11591
65°	9471	9904	12041
70°	8712	8935	12405
75°	7758	7854	12391
80°	6470	6434	12362
85°	4926	4855	11586



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	169.4	3.4
10°-20°	524.6	10.5
20°-30°	842.7	16.9
30°-40°	963.4	19.3
40°-50°	886.8	17.8
50°-60°	725.4	14.5
60°-70°	517.0	10.4
70°-80°	284.1	5.7
80°-90°	76.3	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°	1536.7	30.8
0°-40°	2500.1	50.1
0°-60°	4112.2	82.4
0°-90°	4989.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4989.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1740	1740	1740	1740	1740	
5°	2040	1923	1738	1571	1534	205
15°	2753	2365	1663	1338	1268	785
25°	3019	2639	1521	1125	1062	1355
35°	2021	2518	1320	939	933	1256
45°	1144	1856	1059	774	824	892
55°	727	1141	754	603	722	652
65°	450	632	471	423	572	450
75°	226	292	229	234	361	241
85°	48	60	48	65	114	58
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°	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1
2.5°	1873.6	1868.0	1865.1	1861.6	1860.8	1857.3	1850.2	1840.3	1827.5	1814.0	1814.0
5°	2039.8	2038.4	2027.8	2028.5	2015.0	2000.1	1988.7	1974.5	1946.8	1923.3	1907.0
7.5°	2198.9	2213.8	2210.3	2198.9	2179.0	2157.7	2135.0	2115.1	2064.0	2035.6	2012.1
10°	2396.4	2402.1	2392.1	2375.8	2358.0	2316.8	2287.0	2253.6	2198.2	2149.9	2107.3
12.5°	2569.7	2583.2	2565.4	2549.8	2507.9	2477.3	2447.5	2380.7	2322.5	2261.4	2199.6
15°	2752.9	2738.7	2747.9	2709.6	2679.8	2650.6	2574.6	2506.5	2440.4	2365.1	2300.5
17.5°	2912.0	2912.0	2895.0	2870.1	2838.9	2784.2	2708.2	2632.9	2559.7	2461.0	2369.4
20°	3015.7	3023.5	3003.6	2977.4	2939.7	2882.9	2822.5	2740.8	2643.5	2528.5	2424.8
22.5°	3065.4	3066.8	3059.7	3037.7	3007.2	2958.9	2897.1	2817.6	2714.6	2591.0	2482.3
25°	3018.6	3026.4	3024.2	3022.8	3007.2	2979.5	2929.8	2855.9	2762.2	2638.6	2521.4
27.5°	2853.8	2873.0	2889.3	2896.4	2913.4	2914.9	2899.9	2855.2	2778.5	2662.0	2531.3
30°	2619.4	2609.4	2653.5	2675.5	2733.7	2768.5	2793.4	2790.6	2746.5	2652.1	2527.8
32.5°	2306.9	2333.9	2365.1	2417.0	2485.9	2566.8	2627.9	2673.4	2669.1	2607.3	2503.6
35°	2021.4	2021.4	2061.1	2125.1	2198.2	2295.5	2397.8	2482.3	2534.2	2518.5	2445.4
37.5°	1711.7	1730.9	1776.3	1826.0	1915.5	2009.3	2144.2	2256.5	2365.1	2397.8	2360.2
40°	1480.2	1488.7	1537.0	1578.9	1670.5	1767.8	1880.7	2024.2	2149.2	2229.5	2234.4
42.5°	1308.3	1307.6	1327.5	1365.1	1439.0	1525.6	1647.8	1788.4	1934.7	2048.4	2101.6
45°	1143.5	1142.1	1162.7	1201.0	1253.6	1330.3	1436.1	1576.7	1726.6	1855.9	1939.7
47.5°	1004.3	1017.1	1026.3	1056.1	1099.5	1164.8	1255.7	1367.9	1512.1	1657.0	1769.9
50°	892.1	897.8	917.6	931.8	980.1	1025.6	1098.8	1199.6	1323.2	1475.2	1597.3
52.5°	802.6	806.1	818.2	836.7	864.4	904.1	962.4	1055.4	1166.9	1299.0	1425.5
55°	727.3	725.2	733.0	745.0	769.2	802.6	845.2	916.2	1013.5	1140.7	1257.1
57.5°	653.4	653.4	660.5	669.1	682.5	710.2	752.2	808.3	886.4	999.3	1102.3
60°	581.0	586.0	588.8	597.3	608.7	629.3	660.5	704.6	770.6	863.0	965.2
62.5°	517.1	517.1	522.0	524.9	539.8	554.7	577.4	615.1	666.9	749.3	828.9
65°	450.3	454.6	454.6	460.2	473.0	484.4	502.1	530.6	573.2	632.1	706.7
67.5°	393.5	393.5	397.0	399.9	407.0	414.8	430.4	452.4	488.7	535.5	603.0
70°	335.2	337.4	335.9	339.5	343.8	351.6	362.9	381.4	407.7	448.2	497.9
72.5°	282.7	279.8	281.3	284.8	286.9	291.9	299.0	313.2	334.5	367.2	403.4
75°	225.9	224.4	229.4	228.0	231.5	235.8	242.2	252.8	269.2	291.9	319.6
77.5°	176.1	174.0	176.1	177.6	179.0	182.5	187.5	193.9	205.3	220.2	245.0
80°	126.4	125.7	127.1	128.6	129.3	134.9	136.4	142.8	147.7	159.1	171.2
82.5°	83.8	85.2	85.9	87.4	86.7	89.5	90.9	95.2	99.4	105.1	114.3
85°	48.3	46.2	48.3	48.3	48.3	51.8	51.1	54.0	56.8	59.7	66.1
87.5°	17.0	17.0	17.8	18.5	18.5	20.6	19.9	21.3	24.1	24.1	26.3
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°	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1
2.5°	1809.7	1801.9	1796.2	1779.9	1769.9	1760.7	1752.2	1742.9	1733.0	1720.2	1712.4
5°	1890.0	1872.9	1848.1	1825.3	1799.8	1777.0	1758.6	1738.0	1715.2	1691.8	1671.2
7.5°	1978.7	1946.8	1908.4	1866.5	1826.8	1793.4	1758.6	1725.9	1693.9	1662.7	1633.6
10°	2067.5	2012.1	1961.7	1904.2	1851.6	1801.2	1755.7	1710.3	1670.5	1629.3	1592.4
12.5°	2149.9	2083.2	2009.3	1937.6	1867.2	1801.9	1745.8	1690.4	1639.3	1590.2	1546.9
15°	2213.1	2129.3	2042.0	1956.7	1875.8	1807.6	1734.4	1662.7	1609.4	1549.8	1502.2
17.5°	2285.6	2186.1	2099.5	1997.2	1896.4	1786.3	1708.9	1630.7	1566.8	1509.3	1461.7
20°	2333.9	2224.5	2099.5	1983.7	1880.0	1781.3	1688.3	1598.8	1531.3	1464.5	1407.0
22.5°	2372.2	2259.3	2121.5	2000.8	1870.8	1751.5	1650.6	1562.5	1483.0	1419.8	1365.1
25°	2392.1	2254.3	2122.9	1976.6	1846.6	1732.3	1618.7	1521.3	1441.1	1370.8	1323.9
27.5°	2392.8	2251.5	2095.9	1951.0	1811.8	1688.3	1576.0	1480.2	1390.0	1322.5	1266.4
30°	2389.3	2233.0	2069.0	1910.6	1772.1	1645.6	1528.5	1429.0	1346.6	1274.9	1221.6
32.5°	2366.5	2207.4	2028.5	1862.3	1711.7	1584.6	1476.6	1377.9	1289.8	1224.5	1168.4
35°	2315.4	2151.3	1971.6	1800.5	1657.7	1525.6	1419.1	1319.6	1240.8	1169.8	1112.2
37.5°	2250.1	2096.7	1914.1	1735.1	1581.0	1456.0	1355.9	1262.1	1179.7	1114.4	1056.8
40°	2167.7	2023.5	1843.8	1657.7	1503.6	1377.2	1282.7	1195.3	1125.0	1058.3	1002.2
42.5°	2054.7	1943.9	1759.3	1578.2	1416.9	1297.6	1206.0	1133.6	1061.1	1000.7	944.6
45°	1934.0	1833.1	1669.1	1489.4	1334.6	1211.7	1125.7	1059.0	997.2	936.1	890.7
47.5°	1800.5	1718.1	1566.1	1390.7	1238.0	1129.3	1044.8	985.1	928.3	881.4	836.0
50°	1641.4	1598.1	1456.0	1296.9	1148.5	1037.0	967.4	906.3	864.4	818.9	776.3
52.5°	1493.7	1458.8	1343.1	1186.8	1051.9	953.9	879.3	831.0	789.8	756.4	722.3
55°	1333.1	1315.4	1217.4	1082.4	960.3	862.2	798.3	754.3	721.6	690.4	665.5
57.5°	1185.4	1184.0	1097.3	981.6	862.2	779.1	718.1	681.8	653.4	631.4	610.1
60°	1034.1	1046.2	975.2	869.3	774.9	696.8	641.4	608.7	589.5	568.9	551.2
62.5°	897.0	915.5	850.9	767.8	674.7	610.8	568.2	543.3	522.0	507.1	493.6
65°	765.6	789.1	736.5	662.0	590.9	530.6	494.3	470.9	454.6	446.0	436.8
67.5°	649.9	662.7	627.1	568.9	510.0	457.4	427.6	407.0	392.8	389.2	378.6
70°	534.1	549.0	524.2	470.9	425.4	387.1	360.1	343.8	335.2	330.3	323.2
72.5°	441.1	447.5	422.6	385.7	349.4	317.5	297.6	285.5	275.6	273.4	269.9
75°	345.2	354.4	334.5	306.1	276.3	253.6	238.6	228.7	223.7	220.2	220.2
77.5°	260.7	268.5	257.1	232.3	214.5	194.6	184.7	175.4	173.3	169.7	171.2
80°	185.4	188.9	182.5	165.5	149.9	139.2	130.7	125.7	125.0	122.2	125.0
82.5°	122.9	123.6	116.5	108.7	96.6	90.9	85.2	83.1	82.4	82.4	81.0
85°	68.2	69.6	64.6	59.7	55.4	50.4	49.0	47.6	46.2	48.3	49.7
87.5°	26.3	27.0	26.3	24.1	22.7	21.3	20.6	22.0	19.9	21.3	22.0
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°	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1	1740.1
2.5°	1700.3	1694.7	1686.1	1671.9	1662.0	1651.3	1647.1	1648.5	1644.2	1638.5	1640.0
5°	1655.6	1639.3	1625.0	1605.2	1586.7	1571.1	1566.1	1559.7	1554.0	1550.5	1546.9
7.5°	1608.0	1585.3	1564.0	1544.1	1522.8	1502.9	1495.1	1489.4	1486.5	1476.6	1472.3
10°	1562.5	1536.3	1510.7	1487.3	1465.2	1443.2	1435.4	1428.3	1418.4	1414.1	1409.1
12.5°	1514.2	1488.0	1460.3	1431.9	1409.8	1392.1	1378.6	1373.6	1363.7	1359.4	1356.6
15°	1467.4	1435.4	1413.4	1391.4	1358.0	1338.1	1332.4	1314.7	1309.0	1300.5	1294.8
17.5°	1420.5	1390.7	1358.0	1332.4	1311.8	1287.0	1273.5	1265.7	1255.0	1247.2	1236.5
20°	1374.3	1339.5	1314.0	1282.0	1259.3	1236.5	1219.5	1212.4	1203.2	1192.5	1177.6
22.5°	1329.6	1291.2	1266.4	1236.5	1208.1	1181.9	1167.6	1157.7	1139.2	1137.1	1123.6
25°	1277.0	1242.9	1210.3	1179.0	1151.3	1125.0	1115.8	1100.2	1093.8	1081.0	1078.9
27.5°	1227.3	1191.1	1155.6	1121.5	1097.3	1078.9	1062.5	1052.6	1046.2	1036.3	1037.0
30°	1175.5	1135.7	1102.3	1071.1	1044.8	1027.0	1016.4	1011.4	1002.2	1000.7	995.8
32.5°	1120.1	1083.8	1049.0	1021.3	994.3	978.7	973.7	968.8	963.1	963.8	962.4
35°	1064.7	1032.7	995.8	970.2	948.2	938.9	931.1	929.7	927.6	929.0	929.0
37.5°	1010.7	975.9	945.3	921.9	909.1	896.3	892.8	892.1	892.8	894.2	897.8
40°	958.1	926.2	896.3	877.2	863.0	857.3	852.3	854.4	857.3	862.2	866.5
42.5°	905.6	875.0	850.2	831.0	817.5	814.7	815.4	819.6	820.3	827.4	835.3
45°	850.2	823.9	800.4	785.5	777.0	773.5	774.9	779.1	784.1	794.1	804.0
47.5°	799.0	775.6	755.0	740.1	733.7	732.3	735.1	740.8	752.2	762.1	773.5
50°	747.2	725.9	706.7	693.2	692.5	687.5	693.9	701.0	714.5	728.0	745.0
52.5°	696.0	675.4	659.1	648.5	645.6	645.6	653.4	666.2	678.3	696.0	711.7
55°	642.8	624.3	608.7	605.1	600.9	603.0	611.5	624.3	641.4	661.2	678.3
57.5°	588.1	572.5	561.1	556.1	554.0	561.1	571.0	584.5	606.6	626.4	644.9
60°	536.2	522.7	510.7	509.2	507.8	517.1	529.1	543.3	565.4	585.2	608.0
62.5°	480.8	470.2	462.4	460.2	460.2	469.5	483.0	501.4	522.0	543.3	567.5
65°	424.7	415.5	413.4	410.5	416.9	422.6	436.1	453.8	475.9	499.3	524.9
67.5°	372.9	367.2	362.9	362.9	367.9	378.6	390.6	408.4	431.1	456.0	478.7
70°	321.0	315.3	311.8	315.3	318.2	331.0	343.8	360.8	382.1	406.3	430.4
72.5°	267.1	267.8	268.5	267.8	270.6	282.7	295.5	311.8	332.4	355.8	377.9
75°	219.5	215.9	216.6	218.0	227.3	233.7	246.5	262.1	284.1	305.4	323.9
77.5°	170.5	169.0	172.6	172.6	181.1	188.9	199.6	215.2	234.4	253.6	268.5
80°	125.0	125.7	128.6	129.3	136.4	144.9	156.3	166.9	184.0	197.4	211.7
82.5°	84.5	85.9	89.5	94.5	97.3	102.3	112.2	123.6	135.7	149.9	158.4
85°	49.0	51.1	54.0	57.5	60.4	65.3	72.4	81.7	90.2	98.0	105.1
87.5°	24.1	24.1	26.3	27.7	29.8	32.7	37.6	41.2	46.9	52.6	55.4
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: P243507

CATALOG NUMBER: S124DR-H1195D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1740.1	1740.1	1740.1	1740.1
2.5°	1637.1	1636.4	1633.6	1635.0
5°	1544.8	1537.7	1537.0	1534.1
7.5°	1465.2	1463.1	1463.1	1457.4
10°	1404.2	1397.8	1399.2	1396.3
12.5°	1345.9	1342.4	1338.1	1333.8
15°	1280.6	1280.6	1280.6	1268.5
17.5°	1229.4	1228.7	1225.2	1224.5
20°	1176.2	1173.3	1164.1	1170.5
22.5°	1122.2	1120.1	1112.2	1113.7
25°	1071.8	1069.6	1068.2	1062.5
27.5°	1028.4	1029.1	1030.6	1027.0
30°	995.8	993.6	996.5	992.9
32.5°	965.2	965.2	962.4	963.1
35°	930.4	933.3	934.0	933.3
37.5°	899.9	903.4	906.3	903.4
40°	871.5	874.3	877.2	876.4
42.5°	841.6	846.6	848.7	850.9
45°	813.2	819.6	823.2	823.9
47.5°	784.1	791.9	799.0	798.3
50°	755.7	765.6	772.0	771.3
52.5°	727.3	737.2	745.0	748.6
55°	695.3	708.1	715.2	721.6
57.5°	663.4	677.6	684.7	687.5
60°	627.9	640.6	649.9	652.0
62.5°	588.1	601.6	613.7	616.5
65°	546.9	561.8	571.0	572.5
67.5°	499.3	513.5	522.7	527.0
70°	450.3	461.0	470.9	477.3
72.5°	395.6	408.4	417.6	421.9
75°	338.8	353.0	358.0	360.8
77.5°	279.8	288.4	296.2	296.9
80°	220.9	231.5	234.4	241.5
82.5°	162.6	172.6	170.5	173.3
85°	107.2	110.8	112.9	113.6
87.5°	56.8	59.0	60.4	61.1
90°	0.0	0.0	0.0	0.0

(END OF REPORT)