

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: P243497

Luminaire Tested: **S124DR-H1195D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243497
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-H1195D830-X4F0-XX-UDD-A-W
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4656.9 lumens
Efficiency: N/A
Efficacy: 123.5 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

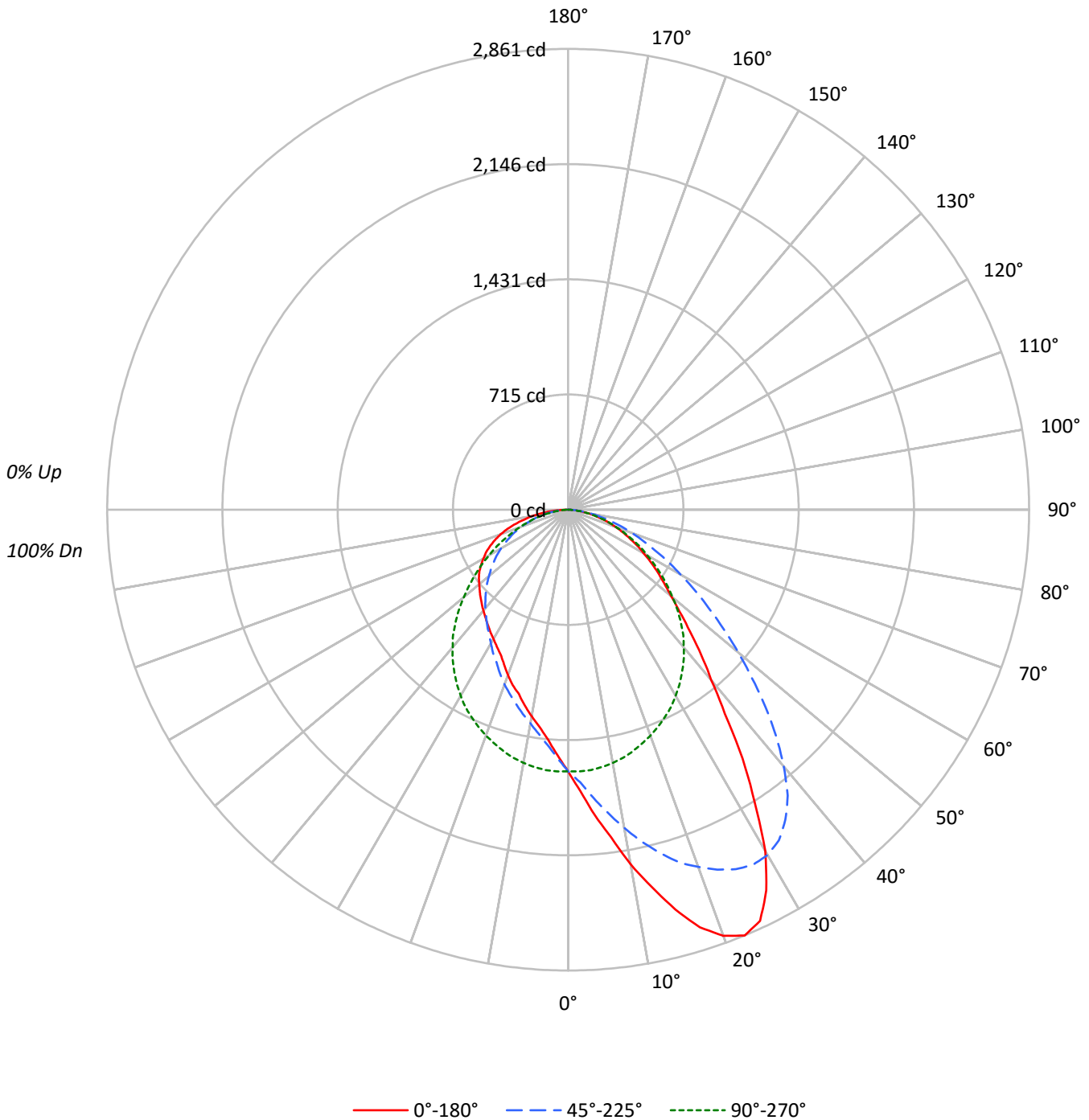
Input Watts (W): 37.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	14436	14436	14436
5°	16987	14474	12777
10°	20188	14408	11764
15°	23645	14280	10895
20°	26625	14115	10334
25°	27632	13926	9726
30°	25093	13690	9512
35°	20472	13366	9452
40°	16030	12946	9492
45°	13417	12425	9667
50°	11514	11698	9955
55°	10520	10910	10437
60°	9641	10100	10818
65°	8840	9244	11238
70°	8132	8337	11578
75°	7240	7332	11567
80°	6040	6004	11538
85°	4600	4528	10821



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	158.1	3.4
10°-20°	489.6	10.5
20°-30°	786.6	16.9
30°-40°	899.1	19.3
40°-50°	827.7	17.8
50°-60°	677.0	14.5
60°-70°	482.5	10.4
70°-80°	265.1	5.7
80°-90°	71.2	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°	1434.3	30.8
0°-40°	2333.4	50.1
0°-60°	3838.1	82.4
0°-90°	4656.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4656.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1624	1624	1624	1624	1624	
5°	1904	1795	1622	1466	1432	191
15°	2569	2208	1552	1249	1184	732
25°	2817	2463	1420	1050	992	1264
35°	1887	2351	1232	876	871	1173
45°	1067	1732	988	722	769	833
55°	679	1065	704	563	674	609
65°	420	590	440	394	534	420
75°	211	272	214	218	337	225
85°	45	56	44	61	106	54
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°	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1
2.5°	1748.7	1743.4	1740.8	1737.5	1736.8	1733.5	1726.9	1717.6	1705.6	1693.0	1693.0
5°	1903.8	1902.5	1892.6	1893.2	1880.6	1866.7	1856.1	1842.9	1817.0	1795.1	1779.9
7.5°	2052.3	2066.3	2062.9	2052.3	2033.8	2013.9	1992.7	1974.1	1926.4	1899.9	1878.0
10°	2236.6	2241.9	2232.6	2217.4	2200.8	2162.4	2134.5	2103.4	2051.7	2006.6	1966.8
12.5°	2398.4	2411.0	2394.4	2379.8	2340.7	2312.2	2284.3	2222.0	2167.7	2110.7	2053.0
15°	2569.4	2556.1	2564.8	2529.0	2501.1	2473.9	2403.0	2339.4	2277.7	2207.5	2147.1
17.5°	2717.9	2717.9	2702.0	2678.8	2649.6	2598.6	2527.6	2457.4	2389.1	2296.9	2211.4
20°	2814.7	2822.0	2803.4	2778.9	2743.7	2690.7	2634.4	2558.1	2467.3	2359.9	2263.1
22.5°	2861.1	2862.4	2855.8	2835.2	2806.7	2761.6	2704.0	2629.7	2533.6	2418.3	2316.8
25°	2817.3	2824.6	2822.6	2821.3	2806.7	2780.9	2734.5	2665.5	2578.0	2462.7	2353.3
27.5°	2663.5	2681.4	2696.7	2703.3	2719.2	2720.5	2706.6	2664.9	2593.3	2484.5	2362.6
30°	2444.8	2435.5	2476.6	2497.1	2551.5	2584.0	2607.2	2604.5	2563.4	2475.3	2359.3
32.5°	2153.1	2178.3	2207.5	2255.8	2320.1	2395.7	2452.7	2495.2	2491.2	2433.5	2336.7
35°	1886.6	1886.6	1923.7	1983.4	2051.7	2142.5	2237.9	2316.8	2365.2	2350.6	2282.4
37.5°	1597.6	1615.5	1657.9	1704.3	1787.8	1875.3	2001.3	2106.0	2207.5	2237.9	2202.8
40°	1381.5	1389.4	1434.5	1473.6	1559.1	1650.0	1755.4	1889.3	2005.9	2080.8	2085.5
42.5°	1221.1	1220.4	1239.0	1274.1	1343.0	1423.9	1537.9	1669.2	1805.7	1911.8	1961.5
45°	1067.3	1065.9	1085.2	1121.0	1170.0	1241.6	1340.4	1471.6	1611.5	1732.2	1810.4
47.5°	937.3	949.3	957.9	985.7	1026.2	1087.2	1172.0	1276.7	1411.3	1546.5	1651.9
50°	832.6	837.9	856.5	869.7	914.8	957.2	1025.5	1119.6	1235.0	1376.8	1490.9
52.5°	749.1	752.4	763.7	780.9	806.7	843.9	898.2	985.1	1089.1	1212.4	1330.4
55°	678.8	676.8	684.1	695.4	717.9	749.1	788.8	855.1	946.0	1064.6	1173.3
57.5°	609.9	609.9	616.5	624.5	637.0	662.9	702.0	754.4	827.3	932.7	1028.8
60°	542.3	546.9	549.5	557.5	568.1	587.3	616.5	657.6	719.2	805.4	900.9
62.5°	482.6	482.6	487.2	489.9	503.8	517.7	538.9	574.1	622.5	699.4	773.6
65°	420.3	424.3	424.3	429.6	441.5	452.1	468.7	495.2	535.0	590.0	659.6
67.5°	367.2	367.2	370.6	373.2	379.8	387.1	401.7	422.3	456.1	499.8	562.8
70°	312.9	314.9	313.6	316.9	320.8	328.1	338.7	356.0	380.5	418.3	464.7
72.5°	263.8	261.2	262.5	265.8	267.8	272.5	279.1	292.3	312.2	342.7	376.5
75°	210.8	209.5	214.1	212.8	216.1	220.1	226.0	236.0	251.2	272.5	298.3
77.5°	164.4	162.4	164.4	165.7	167.1	170.4	175.0	181.0	191.6	205.5	228.7
80°	118.0	117.3	118.7	120.0	120.6	126.0	127.3	133.2	137.9	148.5	159.8
82.5°	78.2	79.5	80.2	81.5	80.9	83.5	84.9	88.8	92.8	98.1	106.7
85°	45.1	43.1	45.1	45.1	45.1	48.4	47.7	50.4	53.0	55.7	61.6
87.5°	15.9	15.9	16.6	17.2	17.2	19.2	18.6	19.9	22.5	22.5	24.5
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1
2.5°	1689.1	1681.8	1676.5	1661.2	1651.9	1643.3	1635.4	1626.8	1617.5	1605.5	1598.2
5°	1764.0	1748.1	1724.9	1703.7	1679.8	1658.6	1641.3	1622.1	1600.9	1579.0	1559.8
7.5°	1846.8	1817.0	1781.2	1742.1	1705.0	1673.8	1641.3	1610.8	1581.0	1551.8	1524.7
10°	1929.7	1878.0	1830.9	1777.2	1728.2	1681.1	1638.7	1596.3	1559.1	1520.7	1486.2
12.5°	2006.6	1944.3	1875.3	1808.4	1742.8	1681.8	1629.4	1577.7	1530.0	1484.2	1443.8
15°	2065.6	1987.4	1905.8	1826.3	1750.7	1687.1	1618.8	1551.8	1502.1	1446.4	1402.0
17.5°	2133.2	2040.4	1959.5	1864.1	1769.9	1667.2	1594.9	1522.0	1462.4	1408.7	1364.2
20°	2178.3	2076.2	1959.5	1851.5	1754.7	1662.6	1575.7	1492.2	1429.2	1366.9	1313.2
22.5°	2214.1	2108.7	1980.1	1867.4	1746.1	1634.7	1540.6	1458.4	1384.1	1325.1	1274.1
25°	2232.6	2104.0	1981.4	1844.8	1723.5	1616.8	1510.7	1419.9	1345.0	1279.4	1235.6
27.5°	2233.3	2101.4	1956.2	1821.0	1691.1	1575.7	1471.0	1381.5	1297.3	1234.3	1181.9
30°	2230.0	2084.2	1931.0	1783.2	1653.9	1535.9	1426.6	1333.8	1256.9	1189.9	1140.2
32.5°	2208.8	2060.3	1893.2	1738.1	1597.6	1478.9	1378.2	1286.0	1203.8	1142.8	1090.5
35°	2161.1	2007.9	1840.2	1680.4	1547.2	1423.9	1324.5	1231.7	1158.1	1091.8	1038.1
37.5°	2100.1	1956.9	1786.5	1619.5	1475.6	1358.9	1265.5	1178.0	1101.1	1040.1	986.4
40°	2023.2	1888.6	1720.9	1547.2	1403.4	1285.4	1197.2	1115.7	1050.0	987.7	935.4
42.5°	1917.8	1814.4	1642.0	1473.0	1322.5	1211.1	1125.6	1058.0	990.4	934.0	881.7
45°	1805.1	1710.9	1557.8	1390.1	1245.6	1130.9	1050.7	988.4	930.7	873.7	831.3
47.5°	1680.4	1603.6	1461.7	1298.0	1155.4	1054.0	975.1	919.4	866.4	822.7	780.2
50°	1532.0	1491.5	1358.9	1210.5	1071.9	967.8	902.9	845.9	806.7	764.3	724.5
52.5°	1394.1	1361.6	1253.5	1107.7	981.8	890.3	820.7	775.6	737.1	706.0	674.2
55°	1244.3	1227.7	1136.2	1010.3	896.2	804.8	745.1	704.0	673.5	644.3	621.1
57.5°	1106.4	1105.1	1024.2	916.1	804.8	727.2	670.2	636.4	609.9	589.3	569.4
60°	965.2	976.5	910.2	811.4	723.2	650.3	598.6	568.1	550.2	531.0	514.4
62.5°	837.2	854.5	794.2	716.6	629.8	570.1	530.3	507.1	487.2	473.3	460.7
65°	714.6	736.5	687.4	617.8	551.5	495.2	461.4	439.5	424.3	416.3	407.7
67.5°	606.6	618.5	585.3	531.0	476.0	426.9	399.1	379.8	366.6	363.3	353.3
70°	498.5	512.4	489.2	439.5	397.1	361.3	336.1	320.8	312.9	308.2	301.6
72.5°	411.7	417.6	394.4	360.0	326.1	296.3	277.8	266.5	257.2	255.2	251.9
75°	322.2	330.8	312.2	285.7	257.9	236.7	222.7	213.5	208.8	205.5	205.5
77.5°	243.3	250.6	240.0	216.8	200.2	181.6	172.4	163.7	161.7	158.4	159.8
80°	173.0	176.3	170.4	154.5	139.9	129.9	122.0	117.3	116.7	114.0	116.7
82.5°	114.7	115.3	108.7	101.4	90.2	84.9	79.5	77.6	76.9	76.9	75.6
85°	63.6	65.0	60.3	55.7	51.7	47.1	45.7	44.4	43.1	45.1	46.4
87.5°	24.5	25.2	24.5	22.5	21.2	19.9	19.2	20.5	18.6	19.9	20.5
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°	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1	1624.1
2.5°	1587.0	1581.7	1573.7	1560.5	1551.2	1541.2	1537.3	1538.6	1534.6	1529.3	1530.6
5°	1545.2	1530.0	1516.7	1498.2	1480.9	1466.3	1461.7	1455.7	1450.4	1447.1	1443.8
7.5°	1500.8	1479.6	1459.7	1441.1	1421.3	1402.7	1395.4	1390.1	1387.4	1378.2	1374.2
10°	1458.4	1433.9	1410.0	1388.1	1367.6	1347.0	1339.7	1333.1	1323.8	1319.8	1315.2
12.5°	1413.3	1388.8	1362.9	1336.4	1315.9	1299.3	1286.7	1282.0	1272.8	1268.8	1266.1
15°	1369.5	1339.7	1319.2	1298.6	1267.5	1248.9	1243.6	1227.0	1221.7	1213.8	1208.5
17.5°	1325.8	1298.0	1267.5	1243.6	1224.4	1201.2	1188.6	1181.3	1171.3	1164.1	1154.1
20°	1282.7	1250.2	1226.4	1196.5	1175.3	1154.1	1138.2	1131.6	1123.0	1113.0	1099.1
22.5°	1240.9	1205.2	1181.9	1154.1	1127.6	1103.1	1089.8	1080.5	1063.3	1061.3	1048.7
25°	1191.9	1160.1	1129.6	1100.4	1074.6	1050.0	1041.4	1026.8	1020.9	1008.9	1006.9
27.5°	1145.5	1111.7	1078.5	1046.7	1024.2	1006.9	991.7	982.4	976.5	967.2	967.8
30°	1097.1	1060.0	1028.8	999.7	975.1	958.6	948.6	944.0	935.4	934.0	929.4
32.5°	1045.4	1011.6	979.1	953.2	928.1	913.5	908.8	904.2	898.9	899.6	898.2
35°	993.7	963.9	929.4	905.5	885.0	876.4	869.1	867.7	865.7	867.1	867.1
37.5°	943.3	910.8	882.3	860.4	848.5	836.6	833.3	832.6	833.3	834.6	837.9
40°	894.3	864.4	836.6	818.7	805.4	800.1	795.5	797.5	800.1	804.8	808.7
42.5°	845.2	816.7	793.5	775.6	763.0	760.3	761.0	765.0	765.6	772.3	779.6
45°	793.5	769.0	747.1	733.2	725.2	721.9	723.2	727.2	731.8	741.1	750.4
47.5°	745.8	723.9	704.7	690.7	684.8	683.4	686.1	691.4	702.0	711.3	721.9
50°	697.4	677.5	659.6	647.0	646.3	641.7	647.7	654.3	666.9	679.5	695.4
52.5°	649.6	630.4	615.2	605.2	602.6	602.6	609.9	621.8	633.1	649.6	664.2
55°	599.9	582.7	568.1	564.8	560.8	562.8	570.8	582.7	598.6	617.2	633.1
57.5°	548.9	534.3	523.7	519.0	517.1	523.7	533.0	545.6	566.1	584.7	601.9
60°	500.5	487.9	476.6	475.3	474.0	482.6	493.9	507.1	527.7	546.2	567.4
62.5°	448.8	438.8	431.5	429.6	429.6	438.2	450.8	468.0	487.2	507.1	529.7
65°	396.4	387.8	385.8	383.2	389.1	394.4	407.0	423.6	444.1	466.0	489.9
67.5°	348.0	342.7	338.7	338.7	343.4	353.3	364.6	381.2	402.4	425.6	446.8
70°	299.6	294.3	291.0	294.3	297.0	308.9	320.8	336.8	356.6	379.2	401.7
72.5°	249.2	249.9	250.6	249.9	252.6	263.8	275.8	291.0	310.2	332.1	352.7
75°	204.8	201.5	202.2	203.5	212.1	218.1	230.0	244.6	265.2	285.0	302.3
77.5°	159.1	157.8	161.1	161.1	169.0	176.3	186.3	200.9	218.8	236.7	250.6
80°	116.7	117.3	120.0	120.6	127.3	135.2	145.8	155.8	171.7	184.3	197.5
82.5°	78.9	80.2	83.5	88.2	90.8	95.5	104.7	115.3	126.6	139.9	147.8
85°	45.7	47.7	50.4	53.7	56.3	61.0	67.6	76.2	84.2	91.5	98.1
87.5°	22.5	22.5	24.5	25.9	27.8	30.5	35.1	38.4	43.8	49.1	51.7
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: P243497

CATALOG NUMBER: S124DR-H1195D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1624.1	1624.1	1624.1	1624.1
2.5°	1528.0	1527.3	1524.7	1526.0
5°	1441.8	1435.2	1434.5	1431.9
7.5°	1367.6	1365.6	1365.6	1360.3
10°	1310.6	1304.6	1305.9	1303.3
12.5°	1256.2	1252.9	1248.9	1244.9
15°	1195.2	1195.2	1195.2	1183.9
17.5°	1147.5	1146.8	1143.5	1142.8
20°	1097.8	1095.1	1086.5	1092.5
22.5°	1047.4	1045.4	1038.1	1039.4
25°	1000.3	998.3	997.0	991.7
27.5°	959.9	960.5	961.9	958.6
30°	929.4	927.4	930.0	926.7
32.5°	900.9	900.9	898.2	898.9
35°	868.4	871.0	871.7	871.0
37.5°	839.9	843.2	845.9	843.2
40°	813.4	816.0	818.7	818.0
42.5°	785.5	790.2	792.2	794.2
45°	759.0	765.0	768.3	769.0
47.5°	731.8	739.1	745.8	745.1
50°	705.3	714.6	720.6	719.9
52.5°	678.8	688.1	695.4	698.7
55°	649.0	660.9	667.5	673.5
57.5°	619.1	632.4	639.0	641.7
60°	586.0	597.9	606.6	608.5
62.5°	548.9	561.5	572.7	575.4
65°	510.4	524.4	533.0	534.3
67.5°	466.0	479.3	487.9	491.9
70°	420.3	430.2	439.5	445.5
72.5°	369.2	381.2	389.8	393.8
75°	316.2	329.5	334.1	336.8
77.5°	261.2	269.1	276.4	277.1
80°	206.2	216.1	218.8	225.4
82.5°	151.8	161.1	159.1	161.7
85°	100.1	103.4	105.4	106.1
87.5°	53.0	55.0	56.3	57.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)