

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: P242121

Luminaire Tested: **S121DR-S1025D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242121  
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-S1025D830-X4F0-XX-UDD-A-W  
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4000.1 lumens  
Efficiency: N/A  
Efficacy: 97.3 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

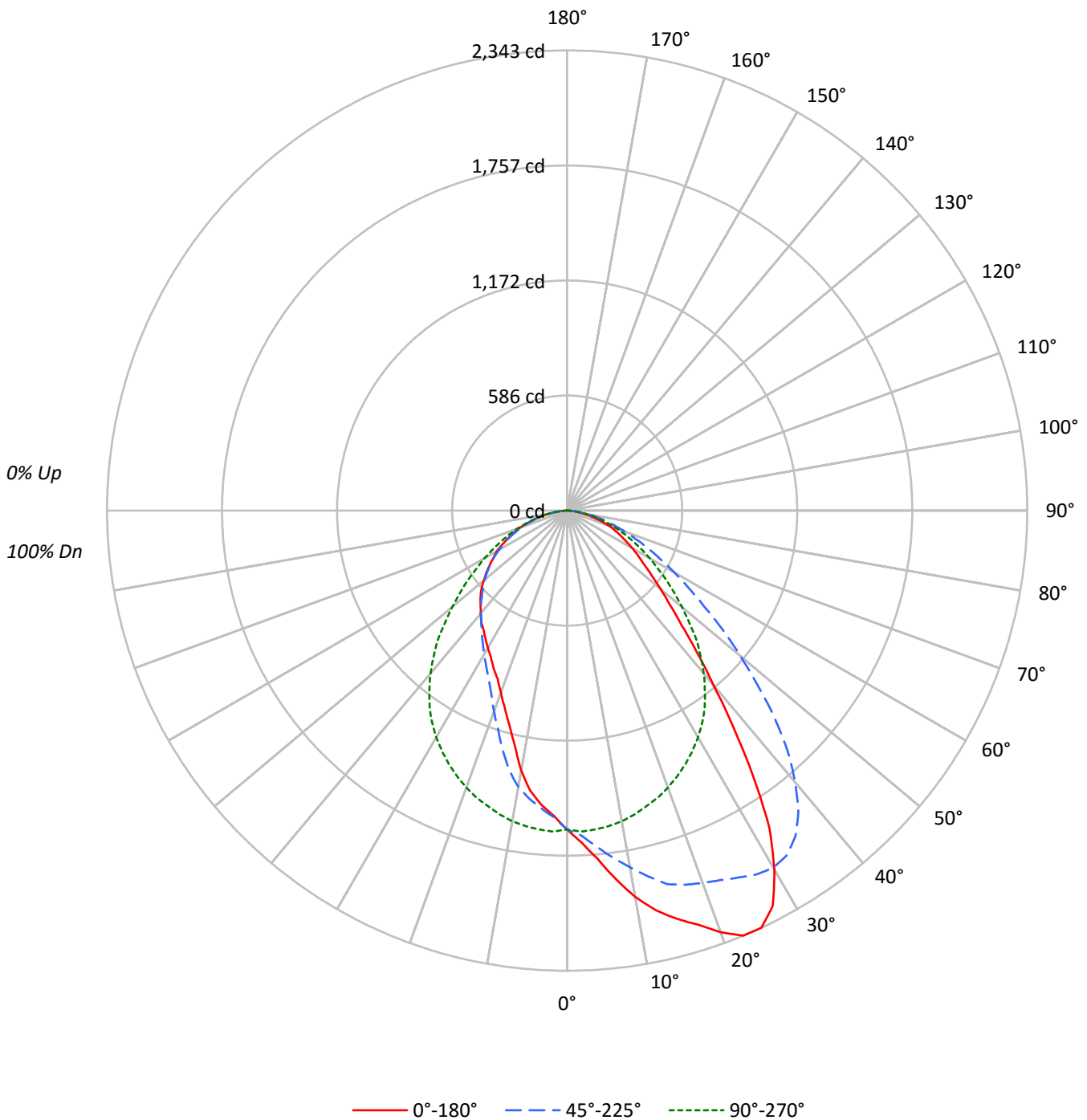
Input Watts (W): 41.1  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P242121

CATALOG NUMBER: S121DR-S1025D830-X4F0-XX-UDD-A-W

### Luminous Intensity Polar Plot





TEST NUMBER: P242121

CATALOG NUMBER: S121DR-S1025D830-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	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°	48098	48098	48098
5°	52933	48490	44707
10°	60104	48313	40434
15°	65991	47779	34752
20°	72017	47306	31099
25°	76589	46561	28956
30°	72218	45596	27624
35°	59675	44161	26832
40°	44740	41874	26476
45°	34478	39045	26164
50°	28593	35125	25565
55°	24682	31899	24827
60°	22684	28765	24504
65°	20963	26004	23115
70°	19847	23356	22143
75°	16313	20629	19668
80°	12866	16807	16210
85°	9961	12341	10913



TEST NUMBER: P242121

CATALOG NUMBER: S121DR-S1025D830-X4F0-XX-UDD-A-W

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	156.1	3.9
10°-20°	455.3	11.4
20°-30°	697.2	17.4
30°-40°	795.5	19.9
40°-50°	713.8	17.8
50°-60°	559.9	14.0
60°-70°	380.9	9.5
70°-80°	196.2	4.9
80°-90°	45.2	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°	1308.5	32.7
0°-40°	2104.0	52.6
0°-60°	3377.8	84.4
0°-90°	4000.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4000.1	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1623	1623	1623	1623	1623	
5°	1780	1717	1630	1521	1503	177
15°	2151	1969	1558	1265	1133	612
25°	2343	2062	1424	945	886	1057
35°	1650	2026	1221	758	742	1023
45°	823	1495	932	614	624	652
55°	478	853	618	475	481	435
65°	299	454	371	324	330	298
75°	142	200	180	166	172	154
85°	29	39	36	34	32	35
90°	0	0	0	0	0	



TEST NUMBER: P242121

CATALOG NUMBER: S121DR-S1025D830-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3
2.5°	1691.7	1691.7	1694.5	1693.8	1691.0	1686.1	1681.9	1677.1	1664.5	1656.1	1663.8
5°	1779.7	1783.2	1786.7	1786.0	1775.5	1766.5	1753.2	1749.7	1727.3	1716.9	1713.4
7.5°	1891.5	1890.8	1892.2	1880.3	1871.2	1862.2	1844.7	1823.0	1796.5	1781.8	1767.9
10°	1997.7	2003.9	2001.2	1986.5	1972.5	1962.7	1934.8	1908.3	1875.4	1844.0	1826.5
12.5°	2084.3	2080.8	2092.7	2078.7	2061.9	2043.8	2016.5	1992.8	1950.2	1907.6	1871.9
15°	2151.3	2147.8	2149.2	2138.8	2121.3	2105.2	2077.3	2052.1	2011.6	1969.0	1931.3
17.5°	2210.0	2213.5	2207.2	2194.6	2170.9	2152.0	2117.1	2082.9	2040.3	1997.7	1960.6
20°	2284.0	2287.5	2275.7	2257.5	2234.4	2202.3	2166.0	2117.1	2069.6	2017.2	1971.1
22.5°	2342.7	2340.6	2336.4	2319.0	2294.5	2264.5	2212.1	2158.3	2101.7	2036.8	1977.4
25°	2342.7	2345.5	2347.6	2338.5	2322.5	2297.3	2261.7	2205.1	2141.5	2061.9	1978.8
27.5°	2267.3	2279.8	2288.9	2288.9	2285.4	2284.7	2263.8	2228.2	2168.8	2088.5	1996.3
30°	2110.8	2127.6	2141.5	2163.2	2189.0	2205.8	2212.1	2198.1	2167.4	2099.6	2003.9
32.5°	1918.0	1916.6	1945.3	1980.2	2031.2	2066.8	2102.4	2123.4	2122.0	2081.5	2001.8
35°	1649.8	1669.4	1703.6	1752.5	1818.1	1876.8	1954.4	1994.9	2027.0	2025.6	1974.6
37.5°	1388.6	1391.4	1429.8	1496.8	1554.8	1645.6	1746.9	1831.4	1909.0	1934.1	1917.3
40°	1156.7	1176.2	1202.1	1258.0	1315.9	1395.6	1524.1	1637.2	1732.9	1807.0	1827.2
42.5°	977.9	988.4	1013.5	1062.4	1114.1	1209.1	1303.4	1424.2	1545.0	1663.1	1723.9
45°	822.8	832.6	855.6	889.9	938.1	1012.8	1109.9	1227.2	1356.5	1494.8	1581.4
47.5°	709.7	713.2	730.6	756.5	801.9	856.3	934.6	1048.4	1179.0	1313.8	1441.0
50°	620.3	625.8	637.7	658.0	691.5	742.5	804.7	890.6	1011.4	1151.1	1280.3
52.5°	542.0	546.2	560.2	571.4	597.2	640.5	694.3	772.5	874.5	1000.2	1133.6
55°	477.8	482.0	488.9	501.5	521.8	551.1	597.2	659.4	746.7	852.8	977.9
57.5°	428.9	431.0	432.4	440.7	456.8	480.6	519.7	568.6	636.3	733.4	844.5
60°	382.8	382.1	387.7	393.9	403.7	418.4	447.0	491.0	551.8	630.7	734.1
62.5°	336.7	340.2	343.7	348.5	354.8	363.2	386.3	419.1	467.3	535.0	620.3
65°	299.0	299.6	302.4	303.1	310.8	319.2	336.7	359.0	398.8	454.0	524.6
67.5°	262.6	263.3	262.6	264.7	268.2	275.2	284.3	302.4	333.2	377.9	439.3
70°	229.1	227.0	224.2	227.7	231.2	234.7	241.0	254.9	278.0	311.5	362.5
72.5°	184.4	185.8	187.2	188.6	189.3	194.2	199.8	209.5	227.7	253.5	292.7
75°	142.5	142.5	144.6	146.0	152.3	153.7	160.0	166.9	181.6	199.8	230.5
77.5°	104.8	104.1	107.6	108.3	111.8	115.9	119.4	126.4	137.6	153.0	173.2
80°	75.4	76.1	75.4	75.4	77.5	80.3	85.2	88.7	96.4	106.2	120.8
82.5°	50.3	50.3	51.0	51.0	53.1	53.1	55.9	58.7	63.6	69.8	80.3
85°	29.3	29.3	28.6	28.6	29.3	29.3	32.1	34.2	34.9	39.1	42.6
87.5°	12.6	12.6	11.9	12.6	11.9	12.6	11.9	13.3	14.0	14.7	16.1
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: P242121

CATALOG NUMBER: S121DR-S1025D830-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3
2.5°	1661.7	1659.6	1658.9	1651.2	1643.5	1634.4	1633.1	1635.8	1624.0	1609.3	1608.6
5°	1705.0	1697.3	1686.1	1671.5	1658.9	1642.1	1633.7	1630.3	1612.1	1591.1	1587.0
7.5°	1753.2	1734.3	1714.1	1691.7	1669.4	1644.9	1629.6	1620.5	1595.3	1569.5	1559.0
10°	1799.3	1774.8	1744.1	1709.9	1678.5	1644.9	1621.9	1605.8	1575.1	1542.9	1526.9
12.5°	1852.4	1811.9	1768.6	1725.9	1687.5	1644.2	1609.3	1584.9	1549.2	1515.0	1491.3
15°	1890.8	1832.1	1798.6	1737.8	1689.6	1637.2	1594.6	1557.6	1518.5	1480.8	1457.0
17.5°	1920.8	1874.7	1816.1	1749.0	1684.0	1627.5	1574.4	1533.2	1481.5	1440.3	1414.4
20°	1930.6	1883.8	1823.7	1750.4	1685.4	1612.8	1549.9	1500.3	1445.2	1394.9	1359.2
22.5°	1927.1	1874.0	1812.6	1740.6	1675.0	1589.0	1523.4	1464.0	1402.6	1348.8	1299.9
25°	1919.4	1858.0	1790.2	1722.5	1649.1	1564.6	1489.2	1424.2	1350.2	1291.5	1232.8
27.5°	1915.2	1834.9	1758.8	1685.4	1615.6	1533.9	1452.8	1380.2	1298.5	1227.2	1151.8
30°	1913.8	1818.1	1722.5	1637.2	1573.0	1489.9	1409.5	1332.7	1237.0	1156.7	1079.9
32.5°	1911.0	1804.2	1691.7	1589.7	1516.4	1441.7	1356.5	1280.3	1172.1	1088.2	1005.8
35°	1892.2	1779.7	1656.1	1540.2	1454.2	1376.7	1300.6	1220.9	1108.5	1018.4	939.5
37.5°	1851.7	1753.2	1621.2	1490.6	1387.9	1309.0	1238.4	1151.8	1042.8	944.3	871.0
40°	1791.6	1711.3	1583.5	1441.7	1320.8	1234.2	1159.5	1082.6	970.2	875.9	809.5
42.5°	1713.4	1651.2	1531.1	1384.4	1255.9	1158.8	1082.6	1006.5	903.1	812.3	753.0
45°	1610.7	1572.3	1466.8	1322.2	1193.0	1080.6	998.1	931.8	836.1	753.0	698.5
47.5°	1496.8	1480.1	1392.1	1253.1	1116.9	1007.9	911.5	841.7	766.9	696.4	648.2
50°	1359.2	1372.5	1303.4	1175.5	1043.5	931.8	837.5	762.0	697.1	642.6	600.0
52.5°	1230.7	1262.2	1206.3	1084.7	966.7	850.8	755.8	686.6	635.6	590.9	553.9
55°	1087.5	1132.9	1099.4	994.6	877.3	774.6	679.6	617.5	573.5	539.2	507.8
57.5°	949.9	1014.2	989.7	895.5	795.6	695.7	606.3	544.8	513.4	488.2	461.7
60°	827.7	886.4	882.9	802.6	702.7	614.0	540.6	485.4	457.5	440.7	417.7
62.5°	718.0	777.4	771.8	699.2	620.3	537.8	475.7	425.4	405.1	387.0	372.3
65°	606.3	657.3	660.1	606.3	530.1	463.8	410.7	370.9	352.7	341.6	331.1
67.5°	505.0	554.6	559.5	516.9	449.8	392.5	352.7	319.2	303.1	293.4	285.7
70°	416.3	456.8	465.9	430.3	373.7	329.0	295.5	269.6	259.1	249.4	246.6
72.5°	337.4	370.2	376.5	343.7	301.7	268.2	242.4	222.8	215.1	205.4	203.3
75°	268.2	291.3	292.0	270.3	238.9	213.0	192.1	180.2	171.8	164.8	163.4
77.5°	194.9	215.1	221.4	205.4	179.5	157.9	146.0	136.9	131.3	127.8	127.1
80°	141.1	154.4	157.2	143.2	127.8	114.6	106.2	98.5	95.0	91.5	90.1
82.5°	88.0	99.9	100.6	90.8	83.1	74.0	67.1	64.3	62.2	60.1	60.1
85°	47.5	53.8	53.1	48.9	45.4	40.5	37.7	36.3	34.9	33.5	33.5
87.5°	18.2	20.3	20.3	21.0	18.2	16.1	14.7	15.4	14.7	14.7	14.7
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: P242121

CATALOG NUMBER: S121DR-S1025D830-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3	1623.3
2.5°	1603.7	1600.9	1593.9	1582.8	1576.5	1562.5	1563.2	1566.0	1566.7	1564.6	1563.9
5°	1575.1	1566.7	1555.5	1541.5	1531.8	1521.3	1514.3	1518.5	1516.4	1515.7	1512.2
7.5°	1543.6	1532.5	1518.5	1504.5	1493.4	1479.4	1473.8	1468.9	1463.3	1462.6	1459.8
10°	1512.2	1498.2	1482.2	1461.9	1446.6	1429.1	1412.3	1403.3	1392.8	1385.1	1369.0
12.5°	1475.2	1451.4	1433.3	1412.3	1384.4	1356.5	1337.6	1311.7	1297.8	1283.8	1265.0
15°	1432.6	1401.9	1370.4	1328.5	1304.1	1265.0	1237.0	1218.2	1196.5	1182.5	1166.5
17.5°	1371.8	1339.7	1299.9	1252.4	1209.1	1169.3	1149.0	1124.6	1115.5	1084.7	1081.9
20°	1311.7	1263.6	1214.0	1165.8	1117.6	1088.9	1063.1	1047.0	1030.3	1010.7	1004.4
22.5°	1244.0	1181.1	1128.7	1084.0	1040.0	1008.6	996.0	977.9	961.8	950.6	940.2
25°	1161.6	1103.6	1050.5	1008.6	968.8	945.0	929.0	915.7	908.7	896.2	892.0
27.5°	1085.4	1027.5	984.9	945.7	913.6	892.7	878.7	866.8	857.7	855.6	850.8
30°	1007.9	958.3	917.8	884.3	855.6	844.5	831.2	825.6	820.0	817.2	811.6
32.5°	938.1	894.1	858.4	826.3	809.5	799.1	792.1	786.5	782.3	780.9	779.5
35°	874.5	834.0	804.7	781.6	769.0	757.9	754.4	749.5	747.4	746.7	746.0
37.5°	818.6	780.9	758.6	738.3	729.2	718.7	719.4	717.3	715.9	711.8	714.5
40°	762.0	732.7	709.7	693.6	687.3	683.8	682.4	681.0	681.7	681.7	681.0
42.5°	710.4	684.5	669.8	654.5	651.7	648.9	648.9	646.8	647.5	651.0	652.4
45°	663.6	643.3	630.0	617.5	617.5	614.0	616.8	616.1	618.2	620.3	621.6
47.5°	616.8	598.6	588.8	582.5	579.7	579.7	581.8	585.3	586.7	587.4	588.8
50°	570.0	556.7	548.3	544.8	544.1	547.6	549.7	549.0	551.1	553.9	556.0
52.5°	528.8	516.9	511.3	509.9	509.9	512.7	513.4	515.5	516.9	516.9	519.7
55°	486.1	477.8	473.6	472.9	473.6	475.0	477.8	479.2	478.5	479.9	479.9
57.5°	443.5	437.2	435.2	437.2	437.2	440.0	440.0	440.0	439.3	442.1	441.4
60°	403.7	396.7	398.8	398.1	400.2	400.2	402.3	402.3	400.2	403.0	404.4
62.5°	363.9	362.5	359.7	359.7	361.8	362.5	360.4	362.5	363.2	365.3	366.7
65°	322.0	317.1	319.2	318.5	320.6	324.1	321.3	321.3	323.4	326.2	327.6
67.5°	282.2	278.0	280.1	280.8	280.8	282.2	280.1	281.5	284.3	287.8	289.9
70°	241.7	240.3	241.0	240.3	240.3	243.8	244.5	243.8	246.6	250.1	250.8
72.5°	200.5	201.9	200.5	201.9	203.3	201.2	201.9	204.0	206.8	208.8	212.3
75°	162.7	160.7	161.3	164.8	164.1	165.5	164.8	166.9	171.8	170.4	171.1
77.5°	125.7	125.0	125.7	126.4	127.1	129.2	128.5	132.0	132.7	133.4	134.8
80°	89.4	90.1	90.8	92.2	94.3	93.6	95.0	95.7	98.5	95.7	97.8
82.5°	60.8	60.1	61.5	61.5	63.6	65.0	62.9	62.9	62.9	62.2	62.2
85°	33.5	35.6	35.6	35.6	34.2	34.2	34.9	34.2	34.2	34.2	33.5
87.5°	14.7	14.7	14.0	13.3	14.0	13.3	13.3	12.6	11.9	11.9	11.2
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: P242121

CATALOG NUMBER: S121DR-S1025D830-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1623.3	1623.3	1623.3	1623.3
2.5°	1559.7	1563.2	1559.0	1556.2
5°	1508.7	1508.7	1504.5	1503.1
7.5°	1451.4	1452.1	1444.5	1438.9
10°	1365.5	1361.3	1350.2	1343.9
12.5°	1251.0	1257.3	1240.5	1227.9
15°	1151.1	1133.6	1140.6	1132.9
17.5°	1067.3	1061.7	1054.0	1054.7
20°	993.9	989.7	985.6	986.3
22.5°	936.0	932.5	931.1	926.2
25°	887.8	889.2	885.7	885.7
27.5°	848.0	845.9	843.8	841.0
30°	810.2	810.9	808.8	807.4
32.5°	776.7	777.4	776.0	773.9
35°	743.9	743.2	743.9	741.8
37.5°	713.8	713.2	713.8	716.6
40°	683.1	683.8	681.7	684.5
42.5°	653.1	653.8	653.8	652.4
45°	620.3	622.3	623.0	624.4
47.5°	588.1	591.6	590.2	590.9
50°	556.0	555.3	555.3	554.6
52.5°	520.4	518.3	517.6	518.3
55°	477.8	480.6	480.6	480.6
57.5°	442.8	443.5	445.6	442.8
60°	407.2	407.2	407.9	413.5
62.5°	367.4	368.1	369.5	370.2
65°	329.0	331.1	330.4	329.7
67.5°	291.3	291.3	292.0	290.6
70°	252.2	252.2	252.2	255.6
72.5°	211.6	211.6	212.3	213.7
75°	173.9	173.9	173.9	171.8
77.5°	132.7	133.4	133.4	134.1
80°	96.4	95.7	95.7	95.0
82.5°	60.8	61.5	60.8	60.1
85°	33.5	34.2	32.1	32.1
87.5°	11.9	11.9	11.2	12.6
90°	0.0	0.0	0.0	0.0

(END OF REPORT)