

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: P242986

Luminaire Tested: **S121DR-H1025D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242986
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-57)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121DR-H1025D835-X4F0-XX-UDD-A-W
Description: DEFINE 1 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: 4049.5 lumens
Efficiency: N/A
Efficacy: 107.4 lumens/watt
Spacing Criteria (0/90/45): 1.13 / 1.2 / 1.28
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

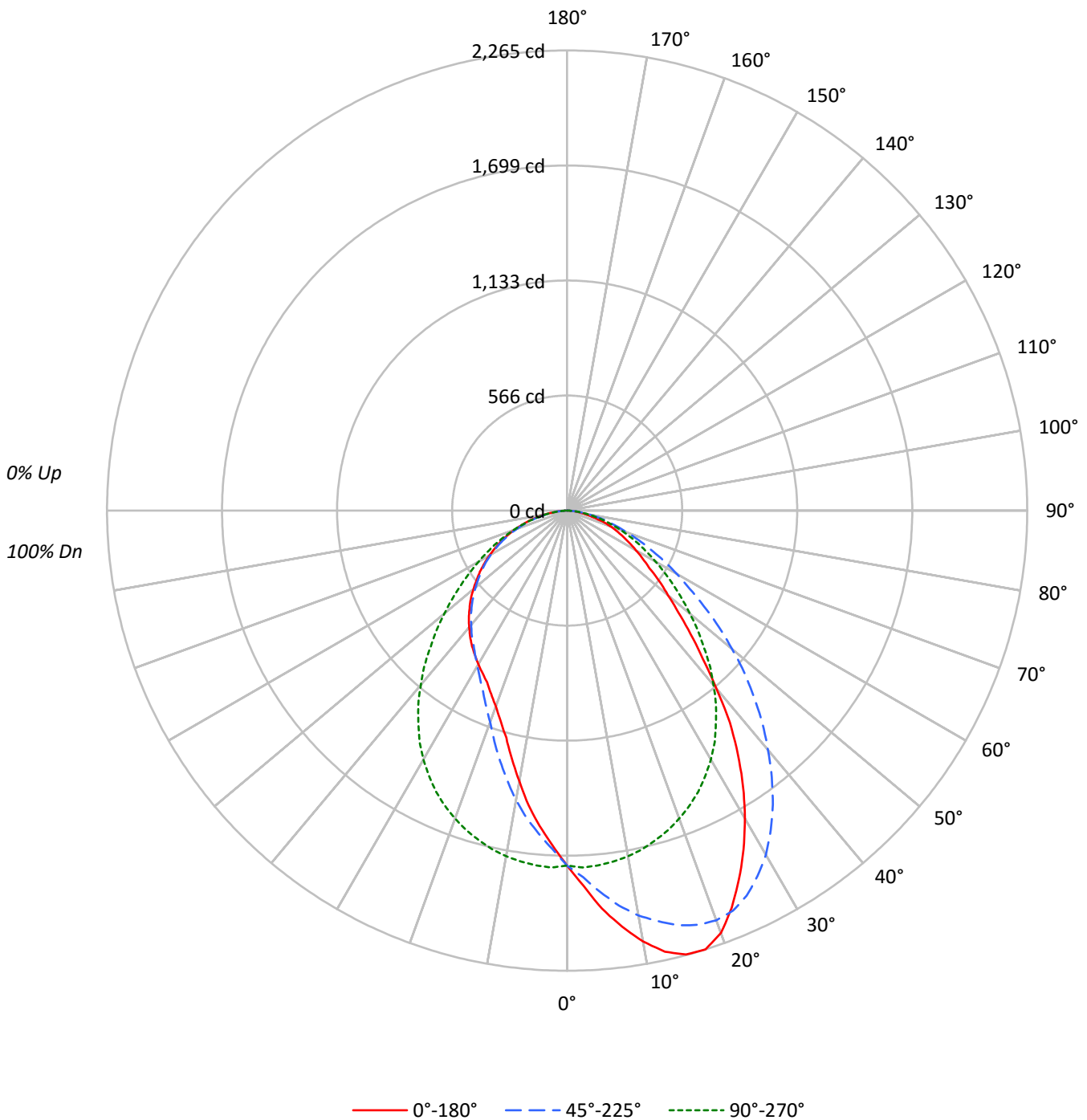
Input Watts (W): 37.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	81	98	91	85	80	88	83	79	84	80	77	81	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	72	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	53	45	40	51	45	40	50	44	40					38				
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36					34				
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33					31				
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30					28				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	51769	51769	51769
5°	58492	52133	46319
10°	64798	51975	40716
15°	69387	51522	35512
20°	69772	50854	32335
25°	65444	49899	30493
30°	59874	48395	29889
35°	53020	46176	29512
40°	44183	43313	29001
45°	36015	39849	28473
50°	29893	36314	27754
55°	25581	32922	27033
60°	23176	29802	26175
65°	21405	27125	25247
70°	19743	24439	23763
75°	15947	21660	21900
80°	12729	17524	18718
85°	9553	12919	15298



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	166.9	4.1
10°-20°	478.2	11.8
20°-30°	696.3	17.2
30°-40°	776.2	19.2
40°-50°	717.6	17.7
50°-60°	571.7	14.1
60°-70°	391.3	9.7
70°-80°	203.2	5.0
80°-90°	48.1	1.2
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°	1341.4	33.1
0°-40°	2117.6	52.3
0°-60°	3406.9	84.1
0°-90°	4049.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4049.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1747	1747	1747	1747	1747	
5°	1967	1885	1753	1597	1557	193
15°	2262	2114	1680	1275	1158	634
25°	2002	2091	1526	981	933	917
35°	1466	1766	1277	803	816	910
45°	860	1300	951	664	680	669
55°	495	822	637	511	523	453
65°	305	454	387	350	360	303
75°	139	204	189	179	191	153
85°	28	39	38	40	45	35
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°	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2
2.5°	1848.4	1848.4	1843.5	1845.6	1842.8	1837.9	1830.2	1821.7	1811.2	1806.9	1804.8
5°	1966.6	1969.4	1965.9	1958.9	1957.5	1951.8	1935.0	1925.1	1902.6	1885.0	1879.4
7.5°	2065.1	2070.0	2070.0	2057.3	2051.7	2037.7	2025.7	2009.5	1981.4	1961.7	1945.5
10°	2153.7	2155.8	2148.1	2141.0	2129.8	2118.5	2098.1	2077.7	2047.5	2023.6	1996.9
12.5°	2224.0	2228.3	2222.6	2211.4	2198.0	2183.3	2157.9	2131.9	2102.4	2070.0	2041.2
15°	2262.0	2268.4	2269.1	2259.9	2250.1	2232.5	2214.2	2186.1	2153.7	2113.6	2066.5
17.5°	2264.8	2267.7	2269.8	2262.7	2256.4	2250.1	2231.8	2208.6	2177.6	2138.2	2094.6
20°	2212.8	2219.1	2226.2	2219.8	2222.6	2222.6	2214.9	2202.9	2177.6	2146.0	2103.8
22.5°	2115.7	2130.5	2139.6	2146.0	2152.3	2161.4	2170.6	2165.0	2155.1	2131.9	2093.9
25°	2001.8	2013.7	2031.3	2037.0	2041.9	2068.6	2084.8	2096.0	2096.0	2091.1	2065.8
27.5°	1880.8	1888.5	1903.3	1923.0	1941.3	1957.5	1991.2	2012.3	2029.2	2029.2	2015.9
30°	1750.0	1761.2	1778.8	1792.2	1814.7	1847.7	1875.9	1901.2	1939.9	1956.8	1954.0
32.5°	1612.1	1623.4	1641.7	1652.9	1685.3	1712.0	1755.6	1795.0	1839.3	1864.6	1880.1
35°	1465.8	1466.5	1497.5	1515.8	1543.9	1576.9	1630.4	1674.7	1723.2	1765.5	1798.5
37.5°	1315.3	1314.6	1336.4	1368.8	1391.3	1437.7	1492.5	1541.8	1609.3	1654.3	1706.4
40°	1142.3	1157.0	1175.3	1204.9	1243.6	1298.4	1350.5	1414.5	1482.0	1538.3	1593.8
42.5°	987.5	999.5	1029.0	1062.1	1103.6	1150.0	1213.3	1284.3	1350.5	1423.6	1485.5
45°	859.5	865.8	883.4	910.2	953.8	1006.5	1072.6	1147.9	1226.0	1300.5	1369.5
47.5°	741.3	760.3	769.5	794.1	825.8	875.0	943.9	1011.4	1101.5	1184.5	1259.7
50°	648.5	652.0	668.2	686.5	723.8	760.3	812.4	882.0	965.7	1059.3	1135.9
52.5°	572.5	571.1	584.5	600.7	626.7	665.4	710.4	777.9	849.0	941.8	1025.5
55°	495.2	502.2	508.5	524.7	547.9	577.5	615.4	672.4	739.2	821.5	909.5
57.5°	441.7	442.4	445.9	459.3	474.8	498.0	534.6	583.1	642.9	714.6	799.7
60°	391.1	391.8	398.1	402.3	412.9	432.6	460.7	500.8	553.5	622.5	697.0
62.5°	347.5	348.2	351.7	355.9	365.8	373.5	397.4	431.9	474.8	536.0	600.0
65°	305.3	306.0	306.0	311.6	317.9	325.0	341.8	363.6	405.1	453.7	510.6
67.5°	264.5	268.7	267.3	271.5	277.1	280.6	292.6	312.3	340.4	381.2	430.5
70°	227.9	227.2	229.3	231.4	233.5	239.1	246.9	260.2	284.2	313.0	356.6
72.5°	188.5	184.3	187.1	189.9	193.4	197.6	204.0	213.8	232.1	255.3	287.7
75°	139.3	137.2	141.4	142.1	148.4	154.0	161.1	170.9	184.3	204.0	225.1
77.5°	101.3	104.1	105.5	106.9	107.6	113.9	121.7	130.1	137.9	156.1	172.3
80°	74.6	74.6	75.3	76.7	78.1	79.5	84.4	90.0	96.4	107.6	123.8
82.5°	52.0	51.3	51.3	52.0	52.8	54.2	56.3	58.4	64.0	69.6	78.1
85°	28.1	28.8	29.5	28.1	28.8	29.5	30.9	33.1	34.5	38.7	42.2
87.5°	9.8	12.0	11.3	11.3	12.0	12.0	12.0	13.4	13.4	13.4	15.5
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°	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2
2.5°	1802.7	1800.6	1795.0	1783.7	1776.0	1761.9	1759.1	1758.4	1745.8	1726.8	1725.4
5°	1869.5	1853.4	1840.0	1820.3	1800.6	1776.7	1762.6	1752.8	1730.3	1702.1	1689.5
7.5°	1930.7	1907.5	1880.1	1849.2	1820.3	1786.6	1761.9	1742.2	1709.2	1673.3	1651.5
10°	1980.0	1951.1	1916.7	1875.2	1835.8	1791.5	1757.0	1727.5	1683.9	1639.5	1610.0
12.5°	2013.7	1981.4	1942.0	1893.5	1845.6	1795.0	1745.1	1707.8	1652.9	1601.6	1563.6
15°	2051.7	1998.3	1957.5	1902.6	1846.3	1785.8	1733.1	1679.6	1616.3	1558.7	1509.4
17.5°	2060.9	2011.6	1963.1	1902.6	1844.2	1770.4	1709.2	1650.1	1579.8	1508.7	1460.9
20°	2069.3	2013.0	1953.3	1887.8	1826.6	1750.7	1681.8	1612.8	1531.2	1454.6	1394.8
22.5°	2063.0	2008.1	1941.3	1867.4	1801.3	1723.2	1648.7	1572.7	1481.3	1401.1	1333.6
25°	2044.7	1994.0	1925.1	1844.2	1764.7	1685.3	1607.2	1526.3	1427.1	1334.3	1259.7
27.5°	2007.4	1962.4	1896.3	1810.5	1726.8	1638.8	1557.3	1472.9	1366.6	1271.7	1192.2
30°	1957.5	1921.6	1854.8	1769.0	1678.2	1584.0	1500.3	1414.5	1304.0	1200.6	1116.2
32.5°	1888.5	1863.2	1805.5	1721.8	1624.1	1524.2	1438.4	1351.2	1233.0	1134.5	1048.7
35°	1811.2	1799.2	1747.9	1664.2	1562.9	1458.1	1365.9	1276.6	1167.6	1063.5	981.2
37.5°	1720.4	1728.9	1682.5	1599.5	1494.7	1387.7	1290.7	1204.2	1093.7	993.9	913.0
40°	1630.4	1643.1	1607.9	1530.5	1421.5	1311.1	1212.6	1119.8	1017.1	929.1	849.0
42.5°	1530.5	1555.8	1528.4	1453.2	1346.9	1230.2	1127.5	1041.0	943.2	862.3	792.0
45°	1424.3	1456.7	1445.4	1368.8	1264.0	1149.3	1041.0	951.0	872.2	800.4	736.4
47.5°	1316.7	1354.0	1349.1	1285.1	1184.5	1067.0	960.1	871.5	799.0	741.3	687.9
50°	1206.3	1244.3	1245.0	1188.0	1094.4	982.6	868.0	787.8	730.1	679.5	635.8
52.5°	1098.7	1136.6	1137.3	1093.0	999.5	890.5	785.0	711.8	662.6	623.2	586.6
55°	986.1	1030.4	1034.7	991.7	908.8	803.9	706.9	637.3	593.6	568.3	536.7
57.5°	872.2	920.0	928.4	894.0	813.8	716.0	634.4	567.6	532.4	514.9	491.0
60°	766.0	813.1	826.5	787.1	721.0	637.3	559.2	502.9	474.8	460.7	443.8
62.5°	668.2	715.3	722.4	688.6	623.2	552.8	493.8	442.4	419.2	408.7	395.3
65°	572.5	614.7	623.9	593.6	534.6	476.2	424.1	386.9	366.5	357.3	348.9
67.5°	484.6	524.0	530.3	502.9	453.7	403.7	365.8	333.4	319.3	307.4	303.9
70°	401.6	437.5	443.1	415.7	377.0	336.2	304.6	282.1	268.7	261.7	256.7
72.5°	325.0	353.1	358.0	341.1	310.9	275.0	250.4	231.4	223.0	216.6	214.5
75°	253.9	281.3	282.1	267.3	242.7	218.0	199.1	189.2	179.4	173.0	171.6
77.5°	194.8	210.3	212.4	204.7	180.8	165.3	150.5	143.5	140.0	133.6	133.6
80°	139.3	148.4	151.9	140.7	129.4	116.1	108.3	102.7	99.9	95.7	95.7
82.5°	86.5	94.3	98.5	90.0	84.4	77.4	71.7	68.2	66.1	64.0	63.3
85°	47.1	52.8	52.8	49.9	45.0	41.5	39.4	38.0	37.3	36.6	35.9
87.5°	16.9	21.1	19.0	19.7	17.6	16.9	16.2	16.2	16.9	15.5	15.5
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°	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2	1747.2
2.5°	1716.2	1712.7	1702.1	1692.3	1684.6	1667.7	1664.2	1665.6	1665.6	1666.3	1658.5
5°	1674.7	1659.9	1643.1	1627.6	1615.6	1596.6	1586.1	1583.3	1581.2	1576.9	1569.2
7.5°	1627.6	1610.7	1586.8	1572.7	1547.4	1526.3	1511.5	1501.7	1495.4	1486.2	1473.6
10°	1579.8	1555.1	1528.4	1500.3	1475.0	1446.8	1423.6	1412.4	1399.0	1389.9	1375.8
12.5°	1531.9	1497.5	1460.9	1428.5	1394.1	1361.0	1337.1	1321.6	1297.7	1284.3	1269.6
15°	1469.3	1427.1	1396.2	1339.9	1323.0	1275.2	1246.4	1234.4	1211.2	1207.0	1183.8
17.5°	1410.3	1361.7	1316.0	1268.9	1223.9	1190.8	1166.2	1150.7	1132.4	1121.2	1105.7
20°	1336.4	1285.8	1230.9	1181.7	1143.7	1108.5	1093.0	1073.3	1062.8	1051.5	1040.3
22.5°	1266.1	1204.2	1149.3	1109.2	1070.5	1041.7	1024.8	1011.4	1002.3	991.0	983.3
25°	1190.8	1133.1	1082.5	1041.0	1003.7	981.2	967.1	959.4	953.8	945.3	940.4
27.5°	1119.1	1060.7	1010.7	979.1	948.8	929.1	922.1	915.1	908.0	905.2	904.5
30°	1042.4	988.9	948.1	920.7	893.3	882.7	879.2	872.2	873.6	874.3	872.2
32.5°	977.7	925.6	894.7	871.5	850.4	842.6	841.9	839.1	839.8	843.3	841.9
35°	910.9	872.2	841.2	822.2	808.9	803.2	803.9	804.7	808.9	809.6	812.4
37.5°	853.9	816.6	796.2	777.9	771.6	771.6	772.3	773.0	776.5	780.7	782.1
40°	797.6	767.4	749.8	737.8	734.3	734.3	737.1	740.6	742.8	747.0	747.7
42.5°	747.0	721.7	708.3	696.3	697.7	701.3	702.0	704.1	709.7	710.4	711.8
45°	697.0	678.0	664.7	661.2	661.2	664.0	667.5	668.9	673.1	673.8	675.2
47.5°	654.1	634.4	624.6	621.1	623.2	626.7	631.6	633.7	637.3	636.5	640.1
50°	606.3	590.1	582.4	581.0	582.4	588.7	590.8	595.8	599.3	601.4	602.8
52.5°	560.6	547.9	544.4	543.7	546.5	550.7	553.5	558.5	562.7	562.7	562.0
55°	517.0	505.7	501.5	505.0	508.5	510.6	516.3	519.1	523.3	524.0	523.3
57.5°	472.7	462.8	461.4	462.8	469.8	474.1	477.6	477.6	479.7	480.4	482.5
60°	426.9	420.6	419.2	422.7	430.5	433.3	435.4	436.1	438.9	437.5	441.7
62.5°	384.0	377.7	380.5	384.0	386.9	391.1	392.5	396.0	395.3	396.7	398.8
65°	339.7	336.2	336.9	341.1	344.6	350.3	350.3	350.3	353.8	353.8	355.2
67.5°	296.8	294.7	297.5	301.0	301.7	305.3	304.6	308.8	311.6	313.0	314.4
70°	255.3	253.9	253.9	257.4	260.9	262.4	263.8	266.6	267.3	269.4	272.9
72.5°	215.9	211.7	212.4	217.3	217.3	220.2	223.7	223.7	227.9	228.6	232.1
75°	173.0	171.6	173.0	175.8	179.4	178.7	182.9	182.2	183.6	188.5	189.2
77.5°	135.0	132.9	136.5	137.9	138.6	139.3	140.7	144.2	147.0	149.1	149.8
80°	97.1	96.4	99.9	101.3	100.6	102.0	104.1	107.6	107.6	109.0	111.1
82.5°	65.4	64.0	66.1	68.2	69.6	70.3	70.3	71.7	72.4	73.9	73.9
85°	37.3	37.3	38.7	39.4	40.8	40.1	41.5	40.8	42.2	43.6	42.9
87.5°	16.2	16.2	16.2	16.2	16.9	16.9	17.6	17.6	16.9	17.6	16.2
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: P242986

CATALOG NUMBER: S121DR-H1025D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1747.2	1747.2	1747.2	1747.2
2.5°	1655.7	1657.1	1653.6	1650.1
5°	1568.5	1563.6	1558.7	1557.3
7.5°	1470.7	1470.7	1458.8	1461.6
10°	1365.9	1361.7	1352.6	1353.3
12.5°	1264.0	1260.4	1255.5	1253.4
15°	1171.8	1173.9	1177.4	1157.7
17.5°	1099.4	1093.7	1090.9	1087.4
20°	1034.7	1031.8	1026.2	1025.5
22.5°	984.7	978.4	977.0	977.7
25°	936.9	936.9	936.9	932.7
27.5°	903.1	903.1	901.0	901.7
30°	873.6	875.0	872.9	873.6
32.5°	845.4	846.2	844.7	844.0
35°	813.8	815.9	815.2	815.9
37.5°	783.6	785.0	783.6	783.6
40°	749.1	752.6	751.9	749.8
42.5°	714.6	714.6	716.7	716.0
45°	678.7	677.3	677.3	679.5
47.5°	640.8	643.6	642.2	642.9
50°	605.6	604.9	602.8	602.1
52.5°	564.1	565.5	564.8	561.3
55°	524.0	524.0	523.3	523.3
57.5°	481.1	483.2	482.5	482.5
60°	440.3	441.7	442.4	441.7
62.5°	398.8	399.5	398.8	399.5
65°	358.7	358.7	358.0	360.1
67.5°	315.1	315.8	315.1	316.5
70°	273.6	275.0	275.7	274.3
72.5°	234.2	232.8	233.5	232.1
75°	190.6	191.3	190.6	191.3
77.5°	149.8	150.5	149.8	150.5
80°	110.4	110.4	111.1	109.7
82.5°	74.6	74.6	76.7	74.6
85°	43.6	43.6	42.2	45.0
87.5°	16.9	16.9	16.9	16.9
90°	0.0	0.0	0.0	0.0

(END OF REPORT)