

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: P242981

Luminaire Tested: **S121DR-H1025D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242981
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-H1025D830-X4F0-XX-UDD-A-W
Description: DEFINE 1 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: 3816.8 lumens
Efficiency: N/A
Efficacy: 101.2 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

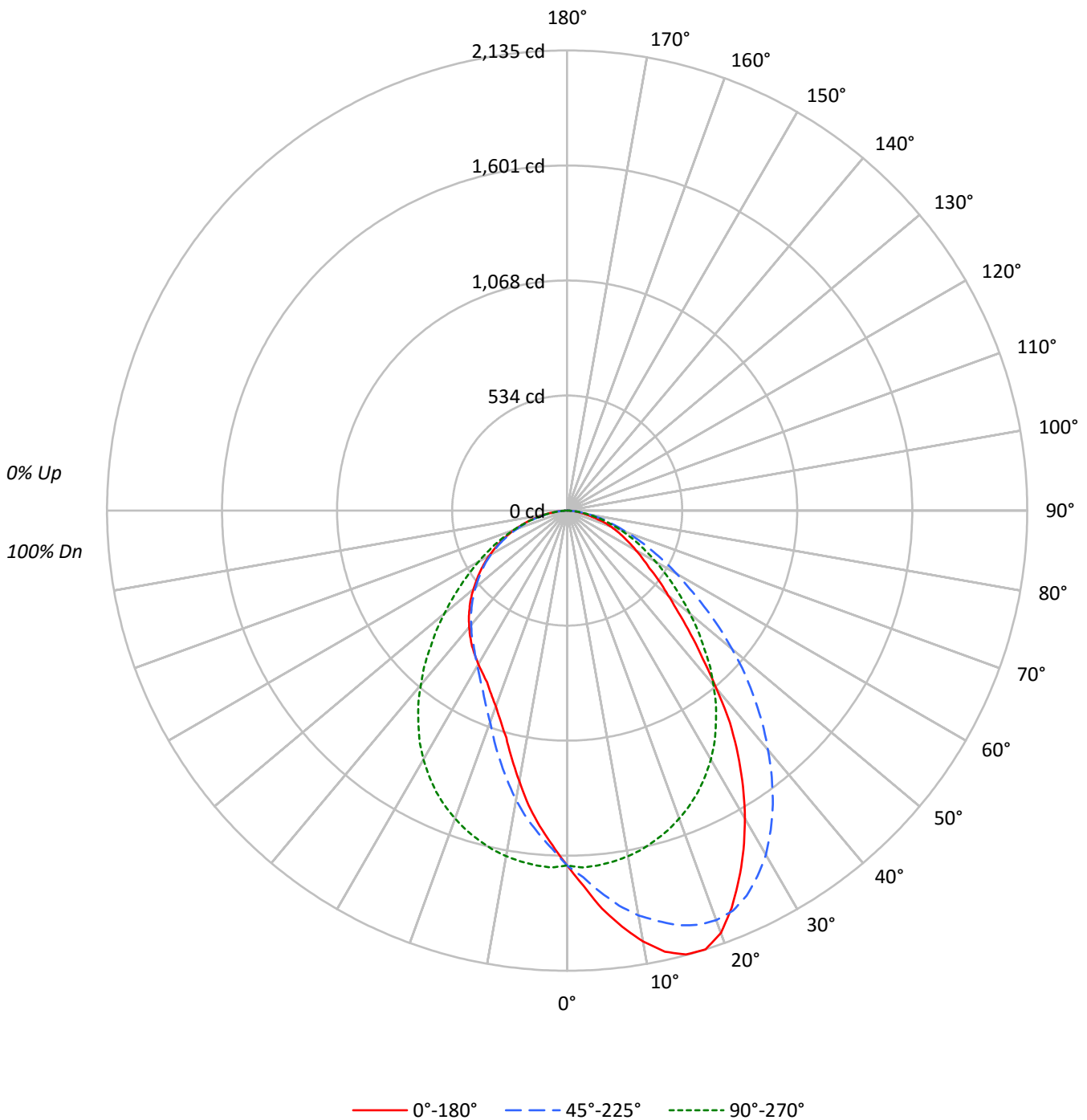
Input Watts (W): 37.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	48794	48794	48794
5°	55131	49138	43657
10°	61076	48987	38376
15°	65402	48561	33472
20°	65765	47934	30478
25°	61685	47032	28740
30°	56432	45613	28171
35°	49974	43525	27816
40°	41642	40822	27334
45°	33945	37557	26835
50°	28174	34226	26159
55°	24109	31026	25478
60°	21843	28089	24670
65°	20171	25562	23795
70°	18608	23027	22403
75°	15031	20412	20641
80°	11995	16517	17643
85°	9009	12171	14414



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	157.3	4.1
10°-20°	450.7	11.8
20°-30°	656.3	17.2
30°-40°	731.6	19.2
40°-50°	676.4	17.7
50°-60°	538.9	14.1
60°-70°	368.8	9.7
70°-80°	191.5	5.0
80°-90°	45.4	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°	1264.3	33.1
0°-40°	1995.9	52.3
0°-60°	3211.1	84.1
0°-90°	3816.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3816.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1647	1647	1647	1647	1647	
5°	1854	1777	1652	1505	1468	182
15°	2132	1992	1583	1202	1091	598
25°	1887	1971	1439	925	879	864
35°	1382	1664	1203	757	769	857
45°	810	1226	896	626	640	631
55°	467	774	601	481	493	427
65°	288	428	365	330	339	286
75°	131	192	178	168	180	144
85°	26	36	36	38	42	33
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°	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8
2.5°	1742.2	1742.2	1737.6	1739.6	1736.9	1732.3	1725.0	1717.0	1707.1	1703.1	1701.1
5°	1853.6	1856.3	1853.0	1846.3	1845.0	1839.7	1823.8	1814.5	1793.3	1776.7	1771.4
7.5°	1946.4	1951.1	1951.1	1939.1	1933.8	1920.6	1909.3	1894.1	1867.5	1849.0	1833.7
10°	2030.0	2032.0	2024.7	2018.0	2007.4	1996.8	1977.6	1958.4	1929.9	1907.3	1882.1
12.5°	2096.3	2100.2	2094.9	2084.3	2071.7	2057.8	2033.9	2009.4	1981.6	1951.1	1923.9
15°	2132.1	2138.0	2138.7	2130.1	2120.8	2104.2	2087.0	2060.5	2030.0	1992.2	1947.8
17.5°	2134.7	2137.4	2139.4	2132.7	2126.8	2120.8	2103.6	2081.7	2052.5	2015.4	1974.3
20°	2085.7	2091.6	2098.2	2092.3	2094.9	2094.9	2087.6	2076.4	2052.5	2022.7	1982.9
22.5°	1994.2	2008.1	2016.7	2022.7	2028.6	2037.3	2045.9	2040.6	2031.3	2009.4	1973.6
25°	1886.8	1898.0	1914.6	1919.9	1924.6	1949.7	1965.0	1975.6	1975.6	1971.0	1947.1
27.5°	1772.7	1780.0	1794.0	1812.5	1829.8	1845.0	1876.8	1896.7	1912.6	1912.6	1900.0
30°	1649.4	1660.0	1676.6	1689.2	1710.4	1741.6	1768.1	1792.0	1828.4	1844.3	1841.7
32.5°	1519.5	1530.1	1547.3	1557.9	1588.4	1613.6	1654.7	1691.9	1733.6	1757.5	1772.1
35°	1381.6	1382.3	1411.4	1428.7	1455.2	1486.3	1536.7	1578.5	1624.2	1664.0	1695.2
37.5°	1239.7	1239.1	1259.6	1290.1	1311.3	1355.1	1406.8	1453.2	1516.8	1559.3	1608.3
40°	1076.6	1090.6	1107.8	1135.6	1172.1	1223.8	1272.9	1333.2	1396.8	1449.9	1502.3
42.5°	930.8	942.1	969.9	1001.1	1040.2	1083.9	1143.6	1210.6	1272.9	1341.8	1400.2
45°	810.1	816.1	832.7	857.9	899.0	948.7	1011.0	1081.9	1155.5	1225.8	1290.8
47.5°	698.8	716.7	725.3	748.5	778.3	824.7	889.7	953.3	1038.2	1116.4	1187.3
50°	611.2	614.6	629.8	647.0	682.2	716.7	765.7	831.3	910.2	998.4	1070.7
52.5°	539.6	538.3	550.9	566.2	590.7	627.2	669.6	733.2	800.2	887.7	966.6
55°	466.7	473.3	479.3	494.6	516.4	544.3	580.1	633.8	696.8	774.3	857.2
57.5°	416.3	417.0	420.3	432.9	447.5	469.4	503.8	549.6	605.9	673.6	753.8
60°	368.6	369.3	375.2	379.2	389.2	407.7	434.2	472.0	521.7	586.7	657.0
62.5°	327.5	328.2	331.5	335.5	344.7	352.0	374.6	407.1	447.5	505.2	565.5
65°	287.7	288.4	288.4	293.7	299.7	306.3	322.2	342.7	381.9	427.6	481.3
67.5°	249.3	253.2	251.9	255.9	261.2	264.5	275.8	294.4	320.9	359.3	405.7
70°	214.8	214.1	216.1	218.1	220.1	225.4	232.7	245.3	267.8	295.0	336.1
72.5°	177.7	173.7	176.3	179.0	182.3	186.3	192.3	201.5	218.8	240.7	271.1
75°	131.3	129.3	133.3	133.9	139.9	145.2	151.8	161.1	173.7	192.3	212.1
77.5°	95.5	98.1	99.4	100.8	101.4	107.4	114.7	122.6	129.9	147.2	162.4
80°	70.3	70.3	70.9	72.3	73.6	74.9	79.6	84.9	90.8	101.4	116.7
82.5°	49.1	48.4	48.4	49.1	49.7	51.0	53.0	55.0	60.3	65.6	73.6
85°	26.5	27.2	27.8	26.5	27.2	27.8	29.2	31.2	32.5	36.5	39.8
87.5°	9.3	11.3	10.6	10.6	11.3	11.3	11.3	12.6	12.6	12.6	14.6
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°	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8
2.5°	1699.1	1697.2	1691.9	1681.2	1674.0	1660.7	1658.0	1657.4	1645.5	1627.6	1626.2
5°	1762.1	1746.9	1734.3	1715.7	1697.2	1674.6	1661.4	1652.1	1630.9	1604.3	1592.4
7.5°	1819.8	1797.9	1772.1	1742.9	1715.7	1683.9	1660.7	1642.1	1611.0	1577.2	1556.6
10°	1866.2	1839.0	1806.5	1767.4	1730.3	1688.5	1656.1	1628.2	1587.1	1545.3	1517.5
12.5°	1898.0	1867.5	1830.4	1784.7	1739.6	1691.9	1644.8	1609.7	1557.9	1509.5	1473.7
15°	1933.8	1883.5	1845.0	1793.3	1740.3	1683.2	1633.5	1583.1	1523.5	1469.1	1422.7
17.5°	1942.5	1896.0	1850.3	1793.3	1738.3	1668.7	1611.0	1555.3	1489.0	1422.0	1377.0
20°	1950.4	1897.4	1841.0	1779.4	1721.7	1650.1	1585.1	1520.2	1443.2	1371.0	1314.6
22.5°	1944.4	1892.7	1829.8	1760.1	1697.8	1624.2	1554.0	1482.4	1396.2	1320.6	1257.0
25°	1927.2	1879.5	1814.5	1738.3	1663.4	1588.4	1514.8	1438.6	1345.1	1257.6	1187.3
27.5°	1892.1	1849.6	1787.3	1706.4	1627.6	1544.7	1467.8	1388.2	1288.1	1198.6	1123.7
30°	1845.0	1811.2	1748.2	1667.3	1581.8	1493.0	1414.1	1333.2	1229.1	1131.7	1052.1
32.5°	1780.0	1756.2	1701.8	1622.9	1530.8	1436.6	1355.7	1273.5	1162.2	1069.3	988.5
35°	1707.1	1695.8	1647.4	1568.5	1473.1	1374.3	1287.5	1203.3	1100.5	1002.4	924.8
37.5°	1621.6	1629.5	1585.8	1507.6	1408.8	1308.0	1216.5	1135.0	1030.9	936.8	860.5
40°	1536.7	1548.7	1515.5	1442.6	1339.8	1235.7	1142.9	1055.4	958.6	875.8	800.2
42.5°	1442.6	1466.5	1440.6	1369.7	1269.6	1159.5	1062.7	981.2	889.0	812.8	746.5
45°	1342.5	1373.0	1362.4	1290.1	1191.3	1083.3	981.2	896.3	822.1	754.4	694.1
47.5°	1241.0	1276.2	1271.5	1211.2	1116.4	1005.7	904.9	821.4	753.1	698.8	648.4
50°	1137.0	1172.8	1173.4	1119.7	1031.6	926.1	818.1	742.5	688.1	640.4	599.3
52.5°	1035.5	1071.3	1072.0	1030.2	942.1	839.3	739.9	670.9	624.5	587.4	552.9
55°	929.5	971.2	975.2	934.8	856.5	757.8	666.3	600.6	559.5	535.7	505.8
57.5°	822.1	867.1	875.1	842.6	767.0	674.9	598.0	535.0	501.9	485.3	462.7
60°	722.0	766.4	779.0	741.8	679.5	600.6	527.0	474.0	447.5	434.2	418.3
62.5°	629.8	674.2	680.9	649.0	587.4	521.1	465.4	417.0	395.1	385.2	372.6
65°	539.6	579.4	588.0	559.5	503.8	448.8	399.8	364.6	345.4	336.8	328.8
67.5°	456.8	493.9	499.9	474.0	427.6	380.5	344.7	314.2	301.0	289.7	286.4
70°	378.5	412.4	417.7	391.8	355.3	316.9	287.1	265.8	253.2	246.6	242.0
72.5°	306.3	332.8	337.4	321.5	293.0	259.2	236.0	218.1	210.2	204.2	202.2
75°	239.3	265.2	265.8	251.9	228.7	205.5	187.6	178.3	169.1	163.1	161.8
77.5°	183.6	198.2	200.2	192.9	170.4	155.8	141.9	135.2	131.9	126.0	126.0
80°	131.3	139.9	143.2	132.6	122.0	109.4	102.1	96.8	94.1	90.2	90.2
82.5°	81.5	88.8	92.8	84.9	79.6	72.9	67.6	64.3	62.3	60.3	59.7
85°	44.4	49.7	49.7	47.1	42.4	39.1	37.1	35.8	35.1	34.5	33.8
87.5°	15.9	19.9	17.9	18.6	16.6	15.9	15.2	15.2	15.9	14.6	14.6
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°	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8	1646.8
2.5°	1617.6	1614.3	1604.3	1595.1	1587.8	1571.9	1568.5	1569.9	1569.9	1570.5	1563.2
5°	1578.5	1564.6	1548.7	1534.1	1522.8	1504.9	1495.0	1492.3	1490.3	1486.3	1479.0
7.5°	1534.1	1518.2	1495.6	1482.4	1458.5	1438.6	1424.7	1415.4	1409.4	1400.8	1388.9
10°	1489.0	1465.8	1440.6	1414.1	1390.2	1363.7	1341.8	1331.2	1318.6	1310.0	1296.7
12.5°	1443.9	1411.4	1377.0	1346.5	1314.0	1282.8	1260.3	1245.7	1223.1	1210.6	1196.6
15°	1384.9	1345.1	1316.0	1262.9	1247.0	1201.9	1174.8	1163.5	1141.6	1137.6	1115.8
17.5°	1329.2	1283.5	1240.4	1196.0	1153.5	1122.4	1099.2	1084.6	1067.4	1056.7	1042.2
20°	1259.6	1211.9	1160.2	1113.8	1078.0	1044.8	1030.2	1011.7	1001.7	991.1	980.5
22.5°	1193.3	1135.0	1083.3	1045.5	1009.0	981.8	965.9	953.3	944.7	934.1	926.8
25°	1122.4	1068.0	1020.3	981.2	946.0	924.8	911.6	904.3	899.0	891.0	886.4
27.5°	1054.8	999.7	952.7	922.8	894.3	875.8	869.1	862.5	855.9	853.2	852.6
30°	982.5	932.1	893.7	867.8	842.0	832.0	828.7	822.1	823.4	824.1	822.1
32.5°	921.5	872.4	843.3	821.4	801.5	794.2	793.6	790.9	791.6	794.9	793.6
35°	858.5	822.1	792.9	775.0	762.4	757.1	757.8	758.4	762.4	763.1	765.7
37.5°	804.8	769.7	750.5	733.2	727.3	727.3	727.9	728.6	731.9	735.9	737.2
40°	751.8	723.3	706.7	695.4	692.1	692.1	694.8	698.1	700.1	704.1	704.7
42.5°	704.1	680.2	667.6	656.3	657.6	661.0	661.6	663.6	668.9	669.6	670.9
45°	657.0	639.1	626.5	623.2	623.2	625.8	629.1	630.5	634.4	635.1	636.4
47.5°	616.5	598.0	588.7	585.4	587.4	590.7	595.3	597.3	600.6	600.0	603.3
50°	571.5	556.2	548.9	547.6	548.9	554.9	556.9	561.5	564.8	566.8	568.2
52.5°	528.4	516.4	513.1	512.5	515.1	519.1	521.7	526.4	530.4	530.4	529.7
55°	487.3	476.7	472.7	476.0	479.3	481.3	486.6	489.3	493.2	493.9	493.2
57.5°	445.5	436.2	434.9	436.2	442.9	446.8	450.1	450.1	452.1	452.8	454.8
60°	402.4	396.4	395.1	398.4	405.7	408.4	410.4	411.0	413.7	412.4	416.3
62.5°	362.0	356.0	358.7	362.0	364.6	368.6	369.9	373.2	372.6	373.9	375.9
65°	320.2	316.9	317.6	321.5	324.8	330.2	330.2	330.2	333.5	333.5	334.8
67.5°	279.8	277.8	280.4	283.7	284.4	287.7	287.1	291.0	293.7	295.0	296.3
70°	240.7	239.3	239.3	242.6	246.0	247.3	248.6	251.3	251.9	253.9	257.2
72.5°	203.5	199.5	200.2	204.9	204.9	207.5	210.8	210.8	214.8	215.5	218.8
75°	163.1	161.8	163.1	165.7	169.1	168.4	172.4	171.7	173.0	177.7	178.3
77.5°	127.3	125.3	128.6	129.9	130.6	131.3	132.6	135.9	138.6	140.5	141.2
80°	91.5	90.8	94.1	95.5	94.8	96.1	98.1	101.4	101.4	102.8	104.7
82.5°	61.7	60.3	62.3	64.3	65.6	66.3	66.3	67.6	68.3	69.6	69.6
85°	35.1	35.1	36.5	37.1	38.5	37.8	39.1	38.5	39.8	41.1	40.4
87.5°	15.2	15.2	15.2	15.2	15.9	15.9	16.6	16.6	15.9	16.6	15.2
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: P242981

CATALOG NUMBER: S121DR-H1025D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1646.8	1646.8	1646.8	1646.8
2.5°	1560.6	1561.9	1558.6	1555.3
5°	1478.4	1473.7	1469.1	1467.8
7.5°	1386.2	1386.2	1375.0	1377.6
10°	1287.5	1283.5	1274.9	1275.5
12.5°	1191.3	1188.0	1183.4	1181.4
15°	1104.5	1106.5	1109.8	1091.2
17.5°	1036.2	1030.9	1028.2	1024.9
20°	975.2	972.6	967.2	966.6
22.5°	928.1	922.2	920.8	921.5
25°	883.1	883.1	883.1	879.1
27.5°	851.2	851.2	849.2	849.9
30°	823.4	824.7	822.7	823.4
32.5°	796.9	797.5	796.2	795.5
35°	767.0	769.0	768.4	769.0
37.5°	738.5	739.9	738.5	738.5
40°	706.0	709.4	708.7	706.7
42.5°	673.6	673.6	675.5	674.9
45°	639.8	638.4	638.4	640.4
47.5°	604.0	606.6	605.3	605.9
50°	570.8	570.1	568.2	567.5
52.5°	531.7	533.0	532.4	529.0
55°	493.9	493.9	493.2	493.2
57.5°	453.5	455.4	454.8	454.8
60°	415.0	416.3	417.0	416.3
62.5°	375.9	376.6	375.9	376.6
65°	338.1	338.1	337.4	339.4
67.5°	297.0	297.7	297.0	298.3
70°	257.9	259.2	259.9	258.6
72.5°	220.8	219.4	220.1	218.8
75°	179.7	180.3	179.7	180.3
77.5°	141.2	141.9	141.2	141.9
80°	104.1	104.1	104.7	103.4
82.5°	70.3	70.3	72.3	70.3
85°	41.1	41.1	39.8	42.4
87.5°	15.9	15.9	15.9	15.9
90°	0.0	0.0	0.0	0.0

(END OF REPORT)