

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: P242990

Luminaire Tested: **S121DR-H880D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242990  
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-H880D840-X4F0-XX-UDD-A-W  
Description: DEFINE 1 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: 3500.7 lumens  
Efficiency: N/A  
Efficacy: 111.1 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

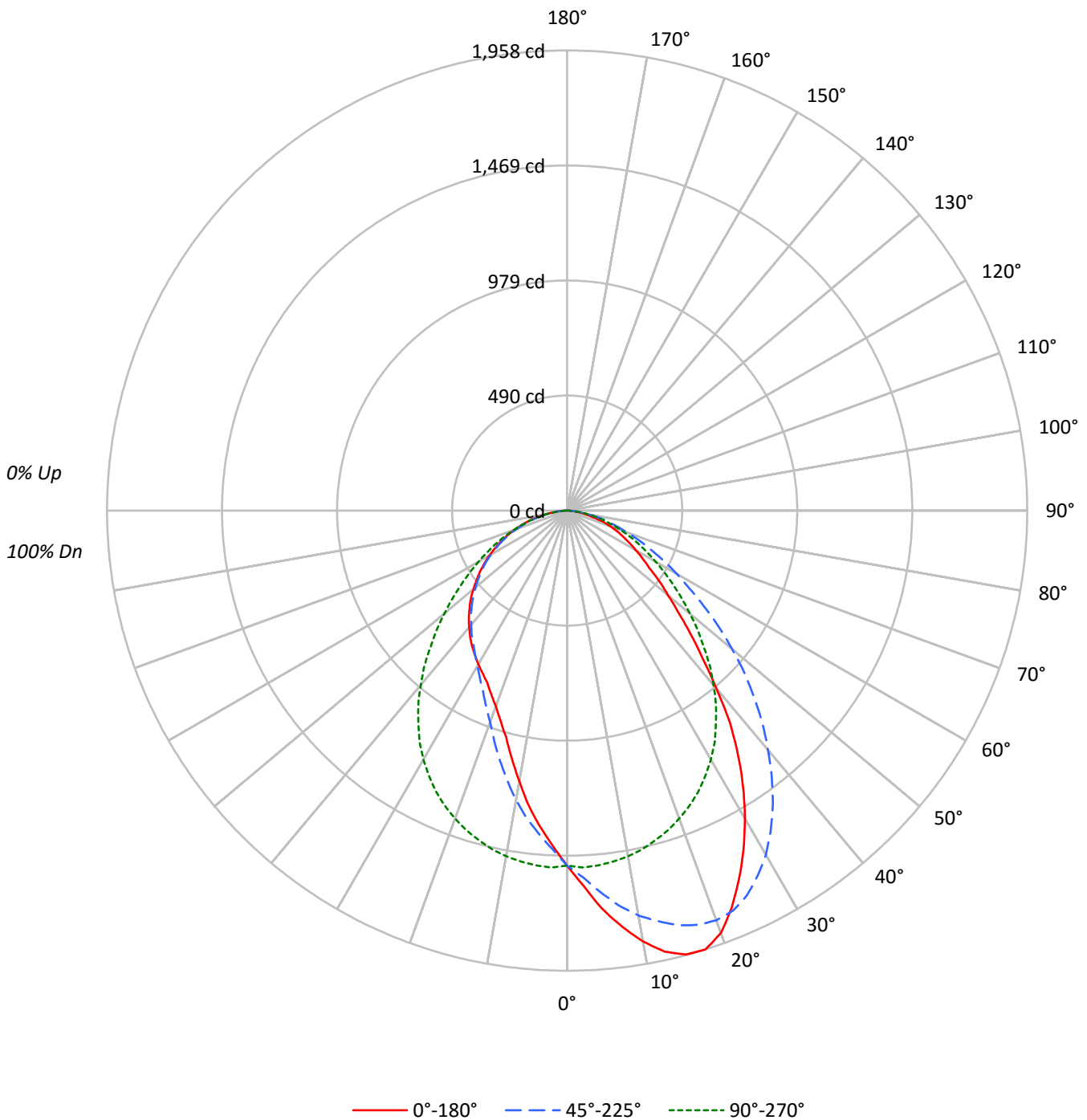
Input Watts (W): 31.5  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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			86	
2	101	93	87	81	98	91	85	80	88	83	79	84	80	77	81	78	75	73			73	
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65	63			63	
4	85	74	66	59	83	72	65	59	70	63	58	68	62	57	66	61	57	54			54	
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50	48			48	
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44	42			42	
7	68	55	46	41	66	54	46	40	53	45	40	51	45	40	50	44	40	38			38	
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36	34			34	
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33	31			31	
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30	28			28	

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	44753	44753	44753
5°	50566	45066	40040
10°	56016	44929	35199
15°	59985	44540	30699
20°	60316	43961	27952
25°	56575	43135	26360
30°	51758	41836	25838
35°	45836	39919	25512
40°	38195	37441	25072
45°	31134	34448	24614
50°	25841	31391	23993
55°	22115	28458	23370
60°	20036	25760	22625
65°	18502	23445	21825
70°	17066	21121	20540
75°	13783	18729	18935
80°	11006	15152	16193
85°	8261	11151	13225



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	144.3	4.1
10°-20°	413.4	11.8
20°-30°	601.9	17.2
30°-40°	671.0	19.2
40°-50°	620.4	17.7
50°-60°	494.2	14.1
60°-70°	338.3	9.7
70°-80°	175.6	5.0
80°-90°	41.6	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°	1159.6	33.1
0°-40°	1830.6	52.3
0°-60°	2945.1	84.1
0°-90°	3500.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3500.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1510	1510	1510	1510	1510	
5°	1700	1630	1515	1380	1346	167
15°	1956	1827	1452	1102	1001	548
25°	1730	1808	1319	848	806	793
35°	1267	1526	1104	694	705	786
45°	743	1124	822	574	587	579
55°	428	710	551	441	452	392
65°	264	392	334	303	311	262
75°	120	176	164	154	165	132
85°	24	33	33	35	39	30
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°	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4
2.5°	1597.9	1597.9	1593.7	1595.5	1593.1	1588.8	1582.1	1574.8	1565.7	1562.1	1560.2
5°	1700.1	1702.5	1699.5	1693.4	1692.2	1687.3	1672.7	1664.2	1644.7	1629.5	1624.7
7.5°	1785.2	1789.5	1789.5	1778.5	1773.7	1761.5	1751.2	1737.2	1712.8	1695.8	1681.8
10°	1861.8	1863.6	1857.0	1850.9	1841.1	1831.4	1813.8	1796.1	1770.0	1749.3	1726.2
12.5°	1922.6	1926.3	1921.4	1911.7	1900.1	1887.4	1865.5	1843.0	1817.4	1789.5	1764.5
15°	1955.5	1960.9	1961.5	1953.6	1945.1	1929.9	1914.1	1889.8	1861.8	1827.2	1786.4
17.5°	1957.9	1960.3	1962.1	1956.1	1950.6	1945.1	1929.3	1909.2	1882.5	1848.4	1810.7
20°	1912.9	1918.4	1924.4	1919.0	1921.4	1921.4	1914.7	1904.4	1882.5	1855.1	1818.6
22.5°	1829.0	1841.8	1849.7	1855.1	1860.6	1868.5	1876.4	1871.5	1863.0	1843.0	1810.1
25°	1730.5	1740.8	1756.0	1760.9	1765.1	1788.2	1802.2	1812.0	1812.0	1807.7	1785.8
27.5°	1625.9	1632.6	1645.4	1662.4	1678.2	1692.2	1721.4	1739.6	1754.2	1754.2	1742.6
30°	1512.8	1522.5	1537.7	1549.3	1568.7	1597.3	1621.6	1643.5	1677.0	1691.6	1689.1
32.5°	1393.6	1403.4	1419.2	1428.9	1456.9	1480.0	1517.7	1551.7	1590.0	1611.9	1625.3
35°	1267.2	1267.8	1294.5	1310.3	1334.6	1363.2	1409.4	1447.7	1489.7	1526.2	1554.8
37.5°	1137.0	1136.4	1155.3	1183.2	1202.7	1242.8	1290.3	1332.8	1391.2	1430.1	1475.1
40°	987.5	1000.2	1016.0	1041.6	1075.0	1122.4	1167.4	1222.8	1281.1	1329.8	1377.8
42.5°	853.7	864.0	889.6	918.1	954.0	994.1	1048.9	1110.3	1167.4	1230.7	1284.2
45°	743.0	748.5	763.7	786.8	824.5	870.1	927.3	992.3	1059.8	1124.3	1183.9
47.5°	640.9	657.3	665.2	686.5	713.8	756.4	816.0	874.4	952.2	1023.9	1089.0
50°	560.6	563.7	577.6	593.4	625.7	657.3	702.3	762.5	834.8	915.7	982.0
52.5°	494.9	493.7	505.3	519.3	541.8	575.2	614.1	672.5	733.9	814.2	886.5
55°	428.1	434.1	439.6	453.6	473.7	499.2	532.0	581.3	639.0	710.2	786.2
57.5°	381.8	382.5	385.5	397.0	410.4	430.5	462.1	504.1	555.7	617.8	691.3
60°	338.1	338.7	344.2	347.8	356.9	373.9	398.3	432.9	478.5	538.1	602.6
62.5°	300.4	301.0	304.0	307.7	316.2	322.9	343.5	373.3	410.4	463.3	518.7
65°	263.9	264.5	264.5	269.4	274.8	280.9	295.5	314.4	350.2	392.2	441.4
67.5°	228.6	232.3	231.1	234.7	239.6	242.6	252.9	270.0	294.3	329.6	372.1
70°	197.0	196.4	198.2	200.0	201.9	206.7	213.4	225.0	245.6	270.6	308.3
72.5°	163.0	159.3	161.7	164.2	167.2	170.9	176.3	184.8	200.7	220.7	248.7
75°	120.4	118.6	122.2	122.8	128.3	133.2	139.2	147.8	159.3	176.3	194.6
77.5°	87.6	90.0	91.2	92.4	93.0	98.5	105.2	112.5	119.2	135.0	149.0
80°	64.5	64.5	65.1	66.3	67.5	68.7	73.0	77.8	83.3	93.0	107.0
82.5°	45.0	44.4	44.4	45.0	45.6	46.8	48.6	50.5	55.3	60.2	67.5
85°	24.3	24.9	25.5	24.3	24.9	25.5	26.8	28.6	29.8	33.4	36.5
87.5°	8.5	10.3	9.7	9.7	10.3	10.3	10.3	11.6	11.6	11.6	13.4
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°	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4
2.5°	1558.4	1556.6	1551.7	1542.0	1535.3	1523.1	1520.7	1520.1	1509.2	1492.7	1491.5
5°	1616.2	1602.2	1590.6	1573.6	1556.6	1535.9	1523.7	1515.2	1495.8	1471.5	1460.5
7.5°	1669.1	1649.0	1625.3	1598.5	1573.6	1544.4	1523.1	1506.1	1477.5	1446.5	1427.7
10°	1711.6	1686.7	1656.9	1621.0	1587.0	1548.7	1518.9	1493.3	1455.6	1417.3	1391.8
12.5°	1740.8	1712.8	1678.8	1636.8	1595.5	1551.7	1508.5	1476.3	1428.9	1384.5	1351.7
15°	1773.7	1727.4	1692.2	1644.7	1596.1	1543.8	1498.2	1452.0	1397.3	1347.4	1304.9
17.5°	1781.6	1739.0	1697.0	1644.7	1594.3	1530.4	1477.5	1426.5	1365.7	1304.2	1262.9
20°	1788.9	1740.2	1688.5	1632.0	1579.1	1513.4	1453.8	1394.2	1323.7	1257.4	1205.7
22.5°	1783.4	1736.0	1678.2	1614.3	1557.2	1489.7	1425.2	1359.6	1280.5	1211.2	1152.8
25°	1767.6	1723.8	1664.2	1594.3	1525.6	1456.9	1389.4	1319.4	1233.7	1153.5	1089.0
27.5°	1735.3	1696.4	1639.3	1565.1	1492.7	1416.7	1346.2	1273.2	1181.4	1099.3	1030.6
30°	1692.2	1661.2	1603.4	1529.2	1450.8	1369.3	1296.9	1222.8	1127.3	1037.9	965.0
32.5°	1632.6	1610.7	1560.8	1488.5	1404.0	1317.6	1243.4	1168.0	1065.9	980.8	906.6
35°	1565.7	1555.4	1511.0	1438.6	1351.1	1260.5	1180.8	1103.6	1009.3	919.4	848.2
37.5°	1487.3	1494.6	1454.4	1382.7	1292.1	1199.7	1115.8	1041.0	945.5	859.2	789.2
40°	1409.4	1420.4	1390.0	1323.1	1228.8	1133.4	1048.3	968.0	879.2	803.2	733.9
42.5°	1323.1	1345.0	1321.3	1256.2	1164.4	1063.5	974.7	899.9	815.4	745.5	684.7
45°	1231.3	1259.2	1249.5	1183.2	1092.6	993.5	899.9	822.1	754.0	691.9	636.6
47.5°	1138.2	1170.5	1166.2	1110.9	1023.9	922.4	830.0	753.4	690.7	640.9	594.7
50°	1042.8	1075.6	1076.2	1027.0	946.1	849.4	750.3	681.0	631.1	587.4	549.7
52.5°	949.8	982.6	983.2	944.9	864.0	769.8	678.6	615.3	572.8	538.7	507.1
55°	852.5	890.8	894.4	857.3	785.6	695.0	611.1	550.9	513.2	491.3	463.9
57.5°	754.0	795.3	802.6	772.8	703.5	619.0	548.5	490.7	460.3	445.1	424.4
60°	662.2	702.9	714.4	680.4	623.2	550.9	483.4	434.7	410.4	398.3	383.7
62.5°	577.6	618.4	624.5	595.3	538.7	477.9	426.8	382.5	362.4	353.3	341.7
65°	494.9	531.4	539.3	513.2	462.1	411.6	366.6	334.4	316.8	308.9	301.6
67.5°	418.9	453.0	458.5	434.7	392.2	349.0	316.2	288.2	276.0	265.7	262.7
70°	347.2	378.2	383.1	359.4	325.9	290.6	263.3	243.8	232.3	226.2	221.9
72.5°	280.9	305.2	309.5	294.9	268.8	237.7	216.5	200.0	192.7	187.3	185.5
75°	219.5	243.2	243.8	231.1	209.8	188.5	172.1	163.6	155.1	149.6	148.4
77.5°	168.4	181.8	183.6	176.9	156.3	142.9	130.1	124.0	121.0	115.5	115.5
80°	120.4	128.3	131.3	121.6	111.9	100.3	93.6	88.8	86.3	82.7	82.7
82.5°	74.8	81.5	85.1	77.8	73.0	66.9	62.0	59.0	57.2	55.3	54.7
85°	40.7	45.6	45.6	43.2	38.9	35.9	34.1	32.8	32.2	31.6	31.0
87.5°	14.6	18.2	16.4	17.0	15.2	14.6	14.0	14.0	14.6	13.4	13.4
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°	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4	1510.4
2.5°	1483.6	1480.6	1471.5	1462.9	1456.3	1441.7	1438.6	1439.8	1439.8	1440.4	1433.8
5°	1447.7	1435.0	1420.4	1407.0	1396.7	1380.2	1371.1	1368.7	1366.9	1363.2	1356.5
7.5°	1407.0	1392.4	1371.7	1359.6	1337.7	1319.4	1306.7	1298.2	1292.7	1284.8	1273.8
10°	1365.7	1344.4	1321.3	1296.9	1275.1	1250.7	1230.7	1220.9	1209.4	1201.5	1189.3
12.5°	1324.3	1294.5	1262.9	1234.9	1205.1	1176.6	1155.9	1142.5	1121.8	1110.3	1097.5
15°	1270.2	1233.7	1207.0	1158.3	1143.7	1102.4	1077.4	1067.1	1047.0	1043.4	1023.3
17.5°	1219.1	1177.2	1137.6	1096.9	1058.0	1029.4	1008.1	994.8	978.9	969.2	955.8
20°	1155.3	1111.5	1064.1	1021.5	988.7	958.3	944.9	927.9	918.7	909.0	899.3
22.5°	1094.5	1041.0	993.5	958.9	925.4	900.5	885.9	874.4	866.5	856.7	850.0
25°	1029.4	979.6	935.8	899.9	867.7	848.2	836.1	829.4	824.5	817.2	812.9
27.5°	967.4	916.9	873.8	846.4	820.2	803.2	797.1	791.1	785.0	782.5	781.9
30°	901.1	854.9	819.6	795.9	772.2	763.1	760.0	754.0	755.2	755.8	754.0
32.5°	845.2	800.2	773.4	753.4	735.1	728.4	727.8	725.4	726.0	729.0	727.8
35°	787.4	754.0	727.2	710.8	699.2	694.4	695.0	695.6	699.2	699.9	702.3
37.5°	738.2	705.9	688.3	672.5	667.0	667.0	667.6	668.2	671.3	674.9	676.1
40°	689.5	663.4	648.2	637.8	634.8	634.8	637.2	640.3	642.1	645.7	646.3
42.5°	645.7	623.8	612.3	602.0	603.2	606.2	606.8	608.6	613.5	614.1	615.3
45°	602.6	586.2	574.6	571.6	571.6	574.0	577.0	578.2	581.9	582.5	583.7
47.5°	565.5	548.5	539.9	536.9	538.7	541.8	546.0	547.8	550.9	550.3	553.3
50°	524.1	510.1	503.5	502.2	503.5	508.9	510.8	515.0	518.0	519.9	521.1
52.5°	484.6	473.7	470.6	470.0	472.4	476.1	478.5	482.8	486.4	486.4	485.8
55°	446.9	437.2	433.5	436.6	439.6	441.4	446.3	448.7	452.4	453.0	452.4
57.5°	408.6	400.1	398.9	400.1	406.2	409.8	412.9	412.9	414.7	415.3	417.1
60°	369.1	363.6	362.4	365.4	372.1	374.6	376.4	377.0	379.4	378.2	381.8
62.5°	332.0	326.5	328.9	332.0	334.4	338.1	339.3	342.3	341.7	342.9	344.8
65°	293.7	290.6	291.3	294.9	297.9	302.8	302.8	302.8	305.8	305.8	307.1
67.5°	256.6	254.8	257.2	260.2	260.8	263.9	263.3	266.9	269.4	270.6	271.8
70°	220.7	219.5	219.5	222.5	225.6	226.8	228.0	230.4	231.1	232.9	235.9
72.5°	186.7	183.0	183.6	187.9	187.9	190.3	193.4	193.4	197.0	197.6	200.7
75°	149.6	148.4	149.6	152.0	155.1	154.4	158.1	157.5	158.7	163.0	163.6
77.5°	116.7	114.9	118.0	119.2	119.8	120.4	121.6	124.6	127.1	128.9	129.5
80°	83.9	83.3	86.3	87.6	86.9	88.2	90.0	93.0	93.0	94.2	96.1
82.5°	56.5	55.3	57.2	59.0	60.2	60.8	60.8	62.0	62.6	63.8	63.8
85°	32.2	32.2	33.4	34.1	35.3	34.7	35.9	35.3	36.5	37.7	37.1
87.5°	14.0	14.0	14.0	14.0	14.6	14.6	15.2	15.2	14.6	15.2	14.0
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: P242990

CATALOG NUMBER: S121DR-H880D840-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1510.4	1510.4	1510.4	1510.4
2.5°	1431.3	1432.5	1429.5	1426.5
5°	1355.9	1351.7	1347.4	1346.2
7.5°	1271.4	1271.4	1261.1	1263.5
10°	1180.8	1177.2	1169.3	1169.9
12.5°	1092.6	1089.6	1085.4	1083.5
15°	1013.0	1014.8	1017.9	1000.8
17.5°	950.4	945.5	943.1	940.0
20°	894.4	892.0	887.1	886.5
22.5°	851.3	845.8	844.6	845.2
25°	809.9	809.9	809.9	806.3
27.5°	780.7	780.7	778.9	779.5
30°	755.2	756.4	754.6	755.2
32.5°	730.9	731.5	730.3	729.6
35°	703.5	705.3	704.7	705.3
37.5°	677.4	678.6	677.4	677.4
40°	647.6	650.6	650.0	648.2
42.5°	617.8	617.8	619.6	619.0
45°	586.8	585.5	585.5	587.4
47.5°	553.9	556.4	555.1	555.7
50°	523.5	522.9	521.1	520.5
52.5°	487.6	488.9	488.3	485.2
55°	453.0	453.0	452.4	452.4
57.5°	415.9	417.7	417.1	417.1
60°	380.6	381.8	382.5	381.8
62.5°	344.8	345.4	344.8	345.4
65°	310.1	310.1	309.5	311.3
67.5°	272.4	273.0	272.4	273.6
70°	236.5	237.7	238.4	237.1
72.5°	202.5	201.3	201.9	200.7
75°	164.8	165.4	164.8	165.4
77.5°	129.5	130.1	129.5	130.1
80°	95.5	95.5	96.1	94.9
82.5°	64.5	64.5	66.3	64.5
85°	37.7	37.7	36.5	38.9
87.5°	14.6	14.6	14.6	14.6
90°	0.0	0.0	0.0	0.0

(END OF REPORT)