

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: P242125

Luminaire Tested: **S121DR-S880D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242125  
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-S880D835-X4F0-XX-UDD-A-W  
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 3500K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3651.6 lumens  
Efficiency: N/A  
Efficacy: 104.9 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

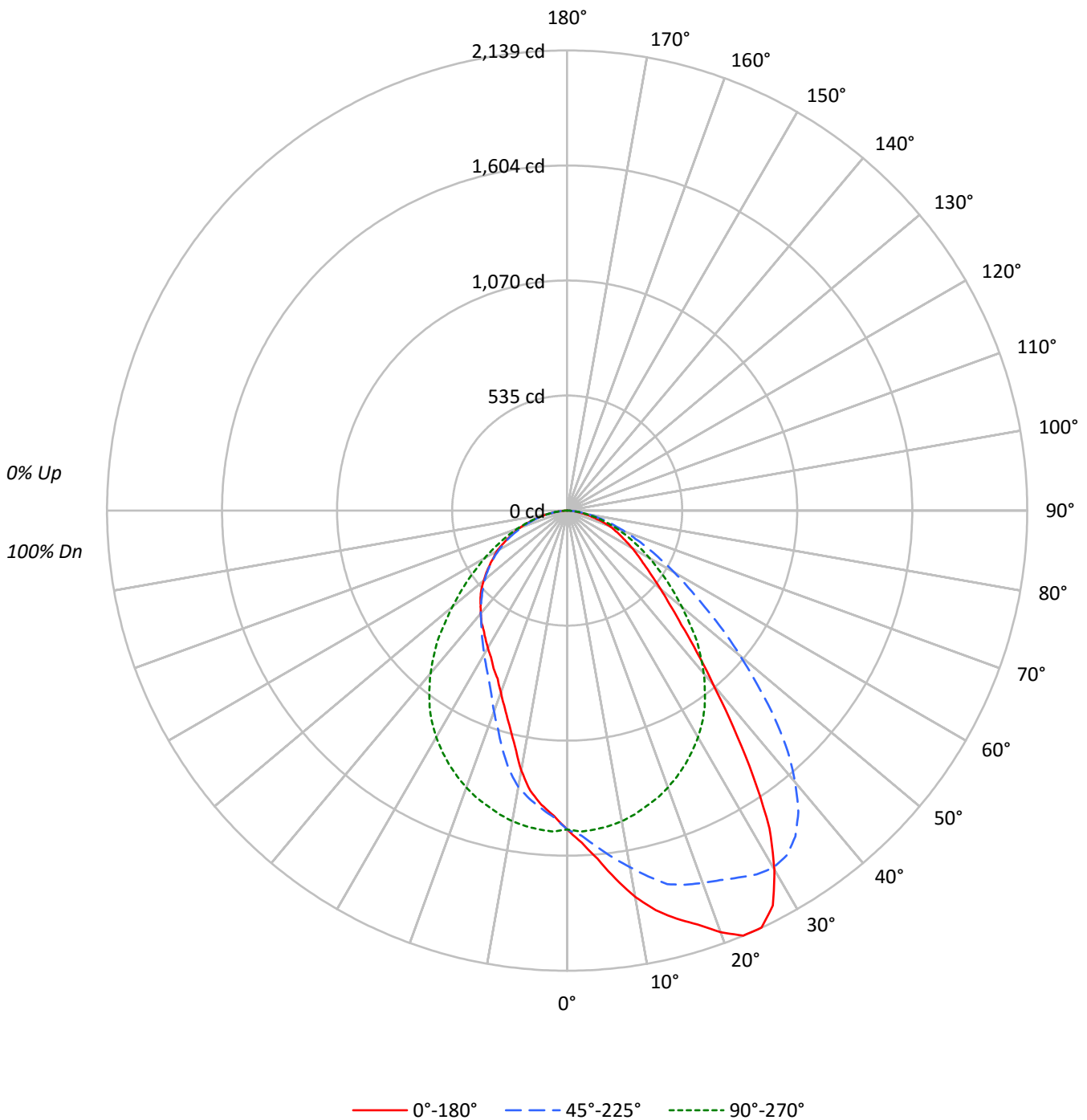
Input Watts (W): 34.8  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P242125

CATALOG NUMBER: S121DR-S880D835-X4F0-XX-UDD-A-W

### Luminous Intensity Polar Plot





TEST NUMBER: P242125

CATALOG NUMBER: S121DR-S880D835-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	100	100	100	100	100		
1	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88	86	86	86	86	86	86	86		
2	101	93	87	82	98	91	85	81	88	83	79	85	80	77	82	78	75	73	73	73	73	73	73	73		
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65	63	63	63	63	63	63	63		
4	85	74	66	59	83	73	65	59	70	63	58	68	62	57	66	61	57	54	54	54	54	54	54	54		
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50	48	48	48	48	48	48	48		
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44	42	42	42	42	42	42	42		
7	68	55	46	41	66	54	46	40	52	45	40	51	45	40	50	44	40	38	38	38	38	38	38	38		
8	63	50	42	36	62	50	42	36	48	41	36	47	41	36	46	40	36	34	34	34	34	34	34	34		
9	59	46	38	33	58	46	38	33	44	38	33	43	37	33	42	37	32	31	31	31	31	31	31	31		
10	56	43	35	30	54	42	35	30	41	34	30	40	34	30	39	34	30	28	28	28	28	28	28	28		

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

	0°	90°	180°
0°	43908	43908	43908
5°	48323	44266	40813
10°	54869	44104	36910
15°	60242	43617	31727
20°	65746	43188	28391
25°	69920	42507	26432
30°	65929	41624	25219
35°	54477	40316	24495
40°	40841	38226	24170
45°	31473	35642	23889
50°	26099	32069	23338
55°	22528	29120	22662
60°	20705	26264	22370
65°	19133	23739	21103
70°	18115	21320	20220
75°	14894	18832	17962
80°	11756	15340	14794
85°	9111	11287	9961



TEST NUMBER: P242125

CATALOG NUMBER: S121DR-S880D835-X4F0-XX-UDD-A-W

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	142.5	3.9
10°-20°	415.6	11.4
20°-30°	636.4	17.4
30°-40°	726.2	19.9
40°-50°	651.6	17.8
50°-60°	511.2	14.0
60°-70°	347.7	9.5
70°-80°	179.1	4.9
80°-90°	41.2	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°	1194.6	32.7
0°-40°	1920.8	52.6
0°-60°	3083.6	84.4
0°-90°	3651.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3651.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1482	1482	1482	1482	1482	
5°	1625	1567	1488	1389	1372	161
15°	1964	1798	1422	1155	1034	559
25°	2139	1882	1300	863	808	965
35°	1506	1849	1115	692	677	934
45°	751	1365	851	560	570	596
55°	436	779	564	434	439	397
65°	273	414	339	296	301	272
75°	130	182	164	151	157	140
85°	27	36	33	31	29	32
90°	0	0	0	0	0	



TEST NUMBER: P242125

CATALOG NUMBER: S121DR-S880D835-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9
2.5°	1544.4	1544.4	1546.9	1546.3	1543.7	1539.3	1535.4	1531.0	1519.5	1511.9	1518.9
5°	1624.7	1627.9	1631.1	1630.5	1620.9	1612.6	1600.5	1597.3	1576.9	1567.3	1564.1
7.5°	1726.7	1726.1	1727.4	1716.5	1708.2	1700.0	1684.0	1664.2	1640.0	1626.6	1613.9
10°	1823.7	1829.4	1826.8	1813.5	1800.7	1791.8	1766.3	1742.0	1712.1	1683.4	1667.4
12.5°	1902.7	1899.5	1910.4	1897.6	1882.3	1865.7	1840.9	1819.2	1780.3	1741.4	1708.9
15°	1963.9	1960.8	1962.0	1952.5	1936.5	1921.9	1896.3	1873.4	1836.4	1797.5	1763.1
17.5°	2017.5	2020.7	2015.0	2003.5	1981.8	1964.6	1932.7	1901.5	1862.6	1823.7	1789.9
20°	2085.1	2088.3	2077.4	2060.9	2039.8	2010.5	1977.3	1932.7	1889.3	1841.5	1799.4
22.5°	2138.7	2136.7	2132.9	2117.0	2094.7	2067.2	2019.4	1970.3	1918.7	1859.4	1805.2
25°	2138.7	2141.2	2143.1	2134.8	2120.2	2097.2	2064.7	2013.0	1955.0	1882.3	1806.4
27.5°	2069.8	2081.3	2089.6	2089.6	2086.4	2085.7	2066.6	2034.1	1979.9	1906.6	1822.4
30°	1927.0	1942.3	1955.0	1974.8	1998.4	2013.7	2019.4	2006.7	1978.6	1916.8	1829.4
32.5°	1751.0	1749.7	1775.8	1807.7	1854.3	1886.8	1919.3	1938.4	1937.2	1900.2	1827.5
35°	1506.1	1524.0	1555.2	1599.8	1659.8	1713.3	1784.1	1821.1	1850.4	1849.2	1802.6
37.5°	1267.6	1270.2	1305.3	1366.5	1419.4	1502.3	1594.7	1671.9	1742.7	1765.6	1750.3
40°	1055.9	1073.8	1097.4	1148.4	1201.3	1274.0	1391.3	1494.6	1582.0	1649.6	1668.1
42.5°	892.7	902.3	925.2	969.9	1017.0	1103.8	1189.8	1300.2	1410.5	1518.2	1573.7
45°	751.1	760.1	781.1	812.4	856.4	924.6	1013.2	1120.3	1238.3	1364.6	1443.6
47.5°	647.8	651.0	667.0	690.6	732.0	781.8	853.2	957.1	1076.3	1199.4	1315.5
50°	566.2	571.3	582.2	600.7	631.3	677.8	734.6	813.0	923.3	1050.8	1168.8
52.5°	494.8	498.6	511.4	521.6	545.2	584.7	633.8	705.2	798.3	913.1	1034.9
55°	436.1	440.0	446.3	457.8	476.3	503.1	545.2	601.9	681.6	778.6	892.7
57.5°	391.5	393.4	394.7	402.4	417.0	438.7	474.4	519.0	580.9	669.5	770.9
60°	349.4	348.8	353.9	359.6	368.6	381.9	408.1	448.3	503.7	575.8	670.2
62.5°	307.3	310.5	313.7	318.2	323.9	331.6	352.6	382.6	426.6	488.4	566.2
65°	272.9	273.5	276.1	276.7	283.8	291.4	307.3	327.7	364.1	414.5	478.9
67.5°	239.8	240.4	239.8	241.7	244.9	251.2	259.5	276.1	304.2	345.0	401.1
70°	209.1	207.2	204.7	207.9	211.1	214.2	220.0	232.7	253.8	284.4	330.9
72.5°	168.3	169.6	170.9	172.2	172.8	177.3	182.4	191.3	207.9	231.5	267.2
75°	130.1	130.1	132.0	133.3	139.0	140.3	146.0	152.4	165.8	182.4	210.4
77.5°	95.6	95.0	98.2	98.8	102.0	105.8	109.0	115.4	125.6	139.6	158.1
80°	68.9	69.5	68.9	68.9	70.8	73.3	77.8	81.0	88.0	96.9	110.3
82.5°	45.9	45.9	46.5	46.5	48.5	48.5	51.0	53.6	58.0	63.8	73.3
85°	26.8	26.8	26.1	26.1	26.8	26.8	29.3	31.2	31.9	35.7	38.9
87.5°	11.5	11.5	10.8	11.5	10.8	11.5	10.8	12.1	12.8	13.4	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: P242125

CATALOG NUMBER: S121DR-S880D835-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9
2.5°	1517.0	1515.0	1514.4	1507.4	1500.4	1492.1	1490.8	1493.4	1482.5	1469.1	1468.5
5°	1556.5	1549.5	1539.3	1525.9	1514.4	1499.1	1491.4	1488.3	1471.7	1452.6	1448.7
7.5°	1600.5	1583.3	1564.8	1544.4	1524.0	1501.6	1487.6	1479.3	1456.4	1432.8	1423.2
10°	1642.6	1620.3	1592.2	1560.9	1532.3	1501.6	1480.6	1465.9	1437.9	1408.6	1393.9
12.5°	1691.0	1654.0	1614.5	1575.6	1540.5	1501.0	1469.1	1446.8	1414.3	1383.0	1361.4
15°	1726.1	1672.5	1641.9	1586.5	1542.5	1494.6	1455.7	1421.9	1386.2	1351.8	1330.1
17.5°	1753.5	1711.4	1657.9	1596.7	1537.4	1485.7	1437.2	1399.6	1352.4	1314.8	1291.2
20°	1762.4	1719.7	1664.9	1597.9	1538.6	1472.3	1414.9	1369.7	1319.3	1273.4	1240.9
22.5°	1759.3	1710.8	1654.7	1589.0	1529.1	1450.6	1390.7	1336.5	1280.4	1231.3	1186.7
25°	1752.2	1696.1	1634.3	1572.4	1505.5	1428.3	1359.5	1300.2	1232.6	1179.0	1125.4
27.5°	1748.4	1675.1	1605.6	1538.6	1474.9	1400.3	1326.3	1260.0	1185.4	1120.3	1051.5
30°	1747.1	1659.8	1572.4	1494.6	1436.0	1360.1	1286.8	1216.6	1129.3	1055.9	985.8
32.5°	1744.6	1647.0	1544.4	1451.3	1384.3	1316.1	1238.3	1168.8	1070.0	993.4	918.2
35°	1727.4	1624.7	1511.9	1406.0	1327.6	1256.8	1187.3	1114.6	1011.9	929.7	857.6
37.5°	1690.4	1600.5	1480.0	1360.7	1267.0	1194.9	1130.5	1051.5	952.0	862.1	795.1
40°	1635.6	1562.2	1445.5	1316.1	1205.8	1126.7	1058.5	988.3	885.7	799.6	739.0
42.5°	1564.1	1507.4	1397.7	1263.8	1146.5	1057.8	988.3	918.8	824.5	741.6	687.4
45°	1470.4	1435.3	1339.0	1207.1	1089.1	986.4	911.2	850.6	763.3	687.4	637.6
47.5°	1366.5	1351.2	1270.8	1143.9	1019.6	920.1	832.1	768.4	700.1	635.7	591.7
50°	1240.9	1253.0	1189.8	1073.2	952.6	850.6	764.5	695.7	636.4	586.6	547.7
52.5°	1123.5	1152.2	1101.2	990.3	882.5	776.6	689.9	626.8	580.3	539.4	505.7
55°	992.8	1034.3	1003.6	908.0	800.9	707.1	620.4	563.7	523.5	492.3	463.6
57.5°	867.2	925.9	903.5	817.5	726.3	635.1	553.5	497.4	468.7	445.7	421.5
60°	755.6	809.2	806.0	732.7	641.5	560.5	493.5	443.2	417.7	402.4	381.3
62.5°	655.5	709.7	704.6	638.3	566.2	491.0	434.2	388.3	369.8	353.3	339.9
65°	553.5	600.0	602.6	553.5	484.0	423.4	374.9	338.6	322.0	311.8	302.2
67.5°	461.0	506.3	510.8	471.9	410.6	358.4	322.0	291.4	276.7	267.8	260.8
70°	380.0	417.0	425.3	392.8	341.1	300.3	269.7	246.1	236.6	227.6	225.1
72.5°	308.0	338.0	343.7	313.7	275.5	244.9	221.3	203.4	196.4	187.5	185.6
75°	244.9	265.9	266.5	246.8	218.1	194.5	175.4	164.5	156.9	150.5	149.2
77.5°	177.9	196.4	202.1	187.5	163.9	144.1	133.3	125.0	119.9	116.7	116.1
80°	128.8	140.9	143.5	130.7	116.7	104.6	96.9	89.9	86.7	83.5	82.3
82.5°	80.3	91.2	91.8	82.9	75.9	67.6	61.2	58.7	56.8	54.8	54.8
85°	43.4	49.1	48.5	44.6	41.4	37.0	34.4	33.2	31.9	30.6	30.6
87.5°	16.6	18.5	18.5	19.1	16.6	14.7	13.4	14.0	13.4	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



TEST NUMBER: P242125

CATALOG NUMBER: S121DR-S880D835-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9	1481.9
2.5°	1464.0	1461.5	1455.1	1444.9	1439.2	1426.4	1427.0	1429.6	1430.2	1428.3	1427.7
5°	1437.9	1430.2	1420.0	1407.3	1398.4	1388.8	1382.4	1386.2	1384.3	1383.7	1380.5
7.5°	1409.2	1399.0	1386.2	1373.5	1363.3	1350.5	1345.4	1341.0	1335.9	1335.2	1332.7
10°	1380.5	1367.7	1353.1	1334.6	1320.6	1304.6	1289.3	1281.0	1271.5	1264.4	1249.8
12.5°	1346.7	1325.0	1308.4	1289.3	1263.8	1238.3	1221.1	1197.5	1184.7	1172.0	1154.8
15°	1307.8	1279.7	1251.1	1212.8	1190.5	1154.8	1129.3	1112.0	1092.3	1079.5	1064.9
17.5°	1252.3	1223.0	1186.7	1143.3	1103.8	1067.4	1048.9	1026.6	1018.3	990.3	987.7
20°	1197.5	1153.5	1108.2	1064.2	1020.2	994.1	970.5	955.8	940.5	922.7	916.9
22.5°	1135.6	1078.3	1030.4	989.6	949.5	920.8	909.3	892.7	878.0	867.8	858.3
25°	1060.4	1007.5	959.0	920.8	884.4	862.7	848.1	835.9	829.6	818.1	814.3
27.5°	990.9	938.0	899.1	863.4	834.0	814.9	802.2	791.3	783.0	781.1	776.6
30°	920.1	874.8	837.9	807.3	781.1	770.9	758.8	753.7	748.6	746.0	740.9
32.5°	856.4	816.2	783.7	754.3	739.0	729.5	723.1	718.0	714.2	712.9	711.6
35°	798.3	761.3	734.6	713.5	702.0	691.8	688.7	684.2	682.3	681.6	681.0
37.5°	747.3	712.9	692.5	674.0	665.7	656.1	656.8	654.9	653.6	649.8	652.3
40°	695.7	668.9	647.8	633.2	627.4	624.3	623.0	621.7	622.3	622.3	621.7
42.5°	648.5	624.9	611.5	597.5	594.9	592.4	592.4	590.5	591.1	594.3	595.6
45°	605.8	587.3	575.2	563.7	563.7	560.5	563.0	562.4	564.3	566.2	567.5
47.5°	563.0	546.5	537.5	531.8	529.2	529.2	531.2	534.3	535.6	536.3	537.5
50°	520.3	508.2	500.5	497.4	496.7	499.9	501.8	501.2	503.1	505.7	507.6
52.5°	482.7	471.9	466.8	465.5	465.5	468.0	468.7	470.6	471.9	471.9	474.4
55°	443.8	436.1	432.3	431.7	432.3	433.6	436.1	437.4	436.8	438.1	438.1
57.5°	404.9	399.2	397.3	399.2	399.2	401.7	401.7	401.7	401.1	403.6	403.0
60°	368.6	362.2	364.1	363.5	365.4	365.4	367.3	367.3	365.4	367.9	369.2
62.5°	332.2	330.9	328.4	328.4	330.3	330.9	329.0	330.9	331.6	333.5	334.8
65°	294.0	289.5	291.4	290.8	292.7	295.9	293.3	293.3	295.2	297.8	299.1
67.5°	257.6	253.8	255.7	256.3	256.3	257.6	255.7	257.0	259.5	262.7	264.6
70°	220.6	219.3	220.0	219.3	219.3	222.5	223.2	222.5	225.1	228.3	228.9
72.5°	183.0	184.3	183.0	184.3	185.6	183.6	184.3	186.2	188.7	190.7	193.8
75°	148.6	146.7	147.3	150.5	149.8	151.1	150.5	152.4	156.9	155.6	156.2
77.5°	114.8	114.1	114.8	115.4	116.1	118.0	117.3	120.5	121.2	121.8	123.1
80°	81.6	82.3	82.9	84.2	86.1	85.4	86.7	87.4	89.9	87.4	89.3
82.5°	55.5	54.8	56.1	56.1	58.0	59.3	57.4	57.4	57.4	56.8	56.8
85°	30.6	32.5	32.5	32.5	31.2	31.2	31.9	31.2	31.2	31.2	30.6
87.5°	13.4	13.4	12.8	12.1	12.8	12.1	12.1	11.5	10.8	10.8	10.2
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: P242125

CATALOG NUMBER: S121DR-S880D835-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1481.9	1481.9	1481.9	1481.9
2.5°	1423.9	1427.0	1423.2	1420.7
5°	1377.3	1377.3	1373.5	1372.2
7.5°	1325.0	1325.7	1318.6	1313.5
10°	1246.6	1242.8	1232.6	1226.8
12.5°	1142.0	1147.8	1132.5	1121.0
15°	1050.8	1034.9	1041.3	1034.3
17.5°	974.3	969.2	962.2	962.8
20°	907.4	903.5	899.7	900.4
22.5°	854.4	851.3	850.0	845.5
25°	810.4	811.7	808.5	808.5
27.5°	774.1	772.2	770.3	767.7
30°	739.7	740.3	738.4	737.1
32.5°	709.1	709.7	708.4	706.5
35°	679.1	678.5	679.1	677.2
37.5°	651.7	651.0	651.7	654.2
40°	623.6	624.3	622.3	624.9
42.5°	596.2	596.8	596.8	595.6
45°	566.2	568.1	568.8	570.1
47.5°	536.9	540.1	538.8	539.4
50°	507.6	506.9	506.9	506.3
52.5°	475.0	473.1	472.5	473.1
55°	436.1	438.7	438.7	438.7
57.5°	404.3	404.9	406.8	404.3
60°	371.7	371.7	372.4	377.5
62.5°	335.4	336.0	337.3	338.0
65°	300.3	302.2	301.6	301.0
67.5°	265.9	265.9	266.5	265.3
70°	230.2	230.2	230.2	233.4
72.5°	193.2	193.2	193.8	195.1
75°	158.8	158.8	158.8	156.9
77.5°	121.2	121.8	121.8	122.4
80°	88.0	87.4	87.4	86.7
82.5°	55.5	56.1	55.5	54.8
85°	30.6	31.2	29.3	29.3
87.5°	10.8	10.8	10.2	11.5
90°	0.0	0.0	0.0	0.0

(END OF REPORT)