

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: P242120

Luminaire Tested: **S121DR-S880D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242120
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-S880D830-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: 3441.8 lumens
Efficiency: N/A
Efficacy: 98.9 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

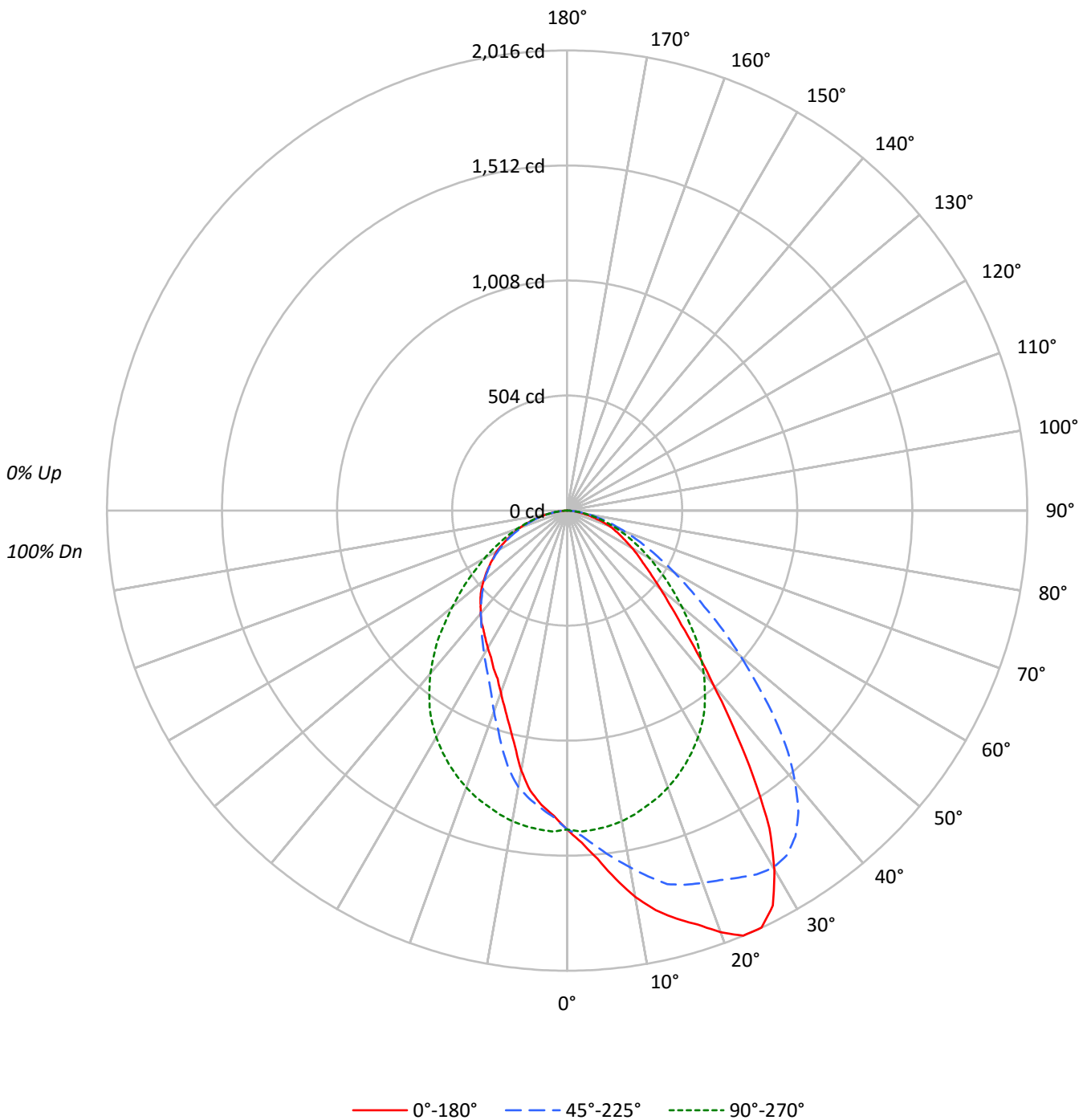
Input Watts (W): 34.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	41384	41384	41384
5°	45548	41720	38469
10°	51716	41571	34789
15°	56782	41111	29902
20°	61968	40707	26757
25°	65902	40065	24915
30°	62138	39233	23771
35°	51349	38001	23088
40°	38497	36033	22782
45°	29667	33593	22514
50°	24601	30225	21997
55°	21237	27446	21361
60°	19520	24753	21084
65°	18032	22372	19890
70°	17075	20098	19059
75°	14035	17756	16920
80°	11074	14452	13941
85°	8567	10641	9383



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	134.3	3.9
10°-20°	391.8	11.4
20°-30°	599.9	17.4
30°-40°	684.5	19.9
40°-50°	614.2	17.8
50°-60°	481.8	14.0
60°-70°	327.8	9.5
70°-80°	168.8	4.9
80°-90°	38.9	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°	1125.9	32.7
0°-40°	1810.4	52.6
0°-60°	2906.4	84.4
0°-90°	3441.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3441.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1397	1397	1397	1397	1397	
5°	1531	1477	1403	1309	1293	152
15°	1851	1694	1340	1088	975	527
25°	2016	1774	1226	813	762	909
35°	1420	1743	1051	652	638	880
45°	708	1286	802	528	537	561
55°	411	734	531	409	414	375
65°	257	391	319	279	284	256
75°	123	172	155	142	148	132
85°	25	34	31	29	28	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°	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7
2.5°	1455.6	1455.6	1458.0	1457.4	1455.0	1450.8	1447.2	1443.0	1432.2	1425.0	1431.6
5°	1531.4	1534.4	1537.4	1536.8	1527.8	1519.9	1508.5	1505.5	1486.3	1477.3	1474.3
7.5°	1627.5	1626.9	1628.1	1617.9	1610.1	1602.3	1587.3	1568.6	1545.8	1533.2	1521.1
10°	1718.9	1724.3	1721.9	1709.3	1697.2	1688.8	1664.8	1641.9	1613.7	1586.7	1571.6
12.5°	1793.4	1790.4	1800.6	1788.6	1774.2	1758.5	1735.1	1714.7	1678.0	1641.3	1610.7
15°	1851.1	1848.1	1849.3	1840.3	1825.3	1811.4	1787.4	1765.8	1730.9	1694.2	1661.8
17.5°	1901.6	1904.6	1899.2	1888.4	1867.9	1851.7	1821.6	1792.2	1755.5	1718.9	1687.0
20°	1965.3	1968.3	1958.1	1942.4	1922.6	1895.0	1863.7	1821.6	1780.8	1735.7	1696.0
22.5°	2015.8	2014.0	2010.4	1995.3	1974.3	1948.5	1903.4	1857.1	1808.4	1752.5	1701.4
25°	2015.8	2018.2	2020.0	2012.2	1998.3	1976.7	1946.1	1897.4	1842.7	1774.2	1702.6
27.5°	1950.9	1961.7	1969.5	1969.5	1966.5	1965.9	1947.9	1917.2	1866.1	1797.0	1717.7
30°	1816.2	1830.7	1842.7	1861.3	1883.6	1898.0	1903.4	1891.4	1864.9	1806.6	1724.3
32.5°	1650.4	1649.2	1673.8	1703.9	1747.7	1778.4	1809.0	1827.1	1825.9	1791.0	1722.5
35°	1419.6	1436.4	1465.9	1507.9	1564.4	1614.9	1681.6	1716.5	1744.1	1742.9	1699.0
37.5°	1194.8	1197.2	1230.3	1288.0	1337.8	1416.0	1503.1	1575.8	1642.5	1664.2	1649.8
40°	995.3	1012.1	1034.3	1082.4	1132.3	1200.8	1311.4	1408.8	1491.1	1554.8	1572.2
42.5°	841.4	850.4	872.1	914.1	958.6	1040.3	1121.5	1225.5	1329.4	1431.0	1483.3
45°	708.0	716.4	736.2	765.7	807.2	871.5	955.0	1056.0	1167.2	1286.2	1360.7
47.5°	610.6	613.6	628.7	650.9	690.0	736.8	804.1	902.1	1014.5	1130.5	1239.9
50°	533.7	538.5	548.7	566.1	595.0	638.9	692.4	766.3	870.3	990.5	1101.6
52.5°	466.4	470.0	482.0	491.6	513.9	551.1	597.4	664.7	752.5	860.6	975.4
55°	411.1	414.7	420.7	431.5	449.0	474.2	513.9	567.3	642.5	733.8	841.4
57.5°	369.0	370.8	372.0	379.2	393.1	413.5	447.1	489.2	547.5	631.1	726.6
60°	329.4	328.7	333.6	339.0	347.4	360.0	384.6	422.5	474.8	542.7	631.7
62.5°	289.7	292.7	295.7	299.9	305.3	312.5	332.4	360.6	402.1	460.4	533.7
65°	257.2	257.8	260.2	260.8	267.4	274.7	289.7	308.9	343.2	390.7	451.4
67.5°	226.0	226.6	226.0	227.8	230.8	236.8	244.6	260.2	286.7	325.1	378.0
70°	197.1	195.3	192.9	195.9	198.9	201.9	207.3	219.4	239.2	268.0	311.9
72.5°	158.7	159.9	161.1	162.3	162.9	167.1	171.9	180.3	195.9	218.2	251.8
75°	122.6	122.6	124.4	125.6	131.0	132.2	137.6	143.6	156.3	171.9	198.3
77.5°	90.2	89.5	92.6	93.2	96.2	99.8	102.8	108.8	118.4	131.6	149.0
80°	64.9	65.5	64.9	64.9	66.7	69.1	73.3	76.3	82.9	91.4	104.0
82.5°	43.3	43.3	43.9	43.9	45.7	45.7	48.1	50.5	54.7	60.1	69.1
85°	25.2	25.2	24.6	24.6	25.2	25.2	27.6	29.4	30.1	33.7	36.7
87.5°	10.8	10.8	10.2	10.8	10.2	10.8	10.2	11.4	12.0	12.6	13.8
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°	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7
2.5°	1429.8	1428.0	1427.4	1420.8	1414.2	1406.4	1405.2	1407.6	1397.3	1384.7	1384.1
5°	1467.1	1460.4	1450.8	1438.2	1427.4	1413.0	1405.8	1402.7	1387.1	1369.1	1365.5
7.5°	1508.5	1492.3	1474.9	1455.6	1436.4	1415.4	1402.1	1394.3	1372.7	1350.5	1341.4
10°	1548.2	1527.2	1500.7	1471.3	1444.2	1415.4	1395.5	1381.7	1355.3	1327.6	1313.8
12.5°	1593.9	1559.0	1521.7	1485.1	1452.0	1414.8	1384.7	1363.7	1333.0	1303.6	1283.1
15°	1626.9	1576.4	1547.6	1495.3	1453.8	1408.8	1372.1	1340.2	1306.6	1274.1	1253.7
17.5°	1652.8	1613.1	1562.6	1504.9	1449.0	1400.3	1354.7	1319.2	1274.7	1239.3	1217.0
20°	1661.2	1620.9	1569.2	1506.1	1450.2	1387.7	1333.6	1291.0	1243.5	1200.2	1169.6
22.5°	1658.2	1612.5	1559.6	1497.7	1441.2	1367.3	1310.8	1259.7	1206.8	1160.5	1118.5
25°	1651.6	1598.7	1540.4	1482.1	1419.0	1346.3	1281.3	1225.5	1161.7	1111.3	1060.8
27.5°	1648.0	1578.8	1513.3	1450.2	1390.1	1319.8	1250.1	1187.6	1117.3	1056.0	991.1
30°	1646.8	1564.4	1482.1	1408.8	1353.5	1281.9	1212.8	1146.7	1064.4	995.3	929.2
32.5°	1644.4	1552.4	1455.6	1367.9	1304.8	1240.5	1167.2	1101.6	1008.5	936.4	865.4
35°	1628.1	1531.4	1425.0	1325.2	1251.3	1184.6	1119.1	1050.6	953.8	876.3	808.4
37.5°	1593.3	1508.5	1394.9	1282.5	1194.2	1126.3	1065.6	991.1	897.3	812.6	749.5
40°	1541.6	1472.5	1362.5	1240.5	1136.5	1062.0	997.7	931.6	834.8	753.7	696.6
42.5°	1474.3	1420.8	1317.4	1191.2	1080.6	997.1	931.6	866.0	777.1	699.0	647.9
45°	1385.9	1352.9	1262.1	1137.7	1026.5	929.8	858.8	801.7	719.4	647.9	601.0
47.5°	1288.0	1273.5	1197.8	1078.2	961.0	867.3	784.3	724.2	659.9	599.2	557.7
50°	1169.6	1181.0	1121.5	1011.5	897.9	801.7	720.6	655.7	599.8	552.9	516.3
52.5°	1059.0	1086.0	1037.9	933.4	831.8	732.0	650.3	590.8	546.9	508.5	476.6
55°	935.8	974.8	946.0	855.8	754.9	666.5	584.8	531.3	493.4	464.0	436.9
57.5°	817.4	872.7	851.6	770.5	684.5	598.6	521.7	468.8	441.7	420.1	397.3
60°	712.2	762.7	759.7	690.6	604.6	528.3	465.2	417.7	393.7	379.2	359.4
62.5°	617.8	668.9	664.1	601.6	533.7	462.8	409.3	366.0	348.6	333.0	320.3
65°	521.7	565.5	568.0	521.7	456.2	399.1	353.4	319.1	303.5	293.9	284.9
67.5°	434.5	477.2	481.4	444.7	387.0	337.8	303.5	274.7	260.8	252.4	245.8
70°	358.2	393.1	400.9	370.2	321.5	283.1	254.2	232.0	223.0	214.6	212.2
72.5°	290.3	318.5	323.9	295.7	259.6	230.8	208.5	191.7	185.1	176.7	174.9
75°	230.8	250.6	251.2	232.6	205.5	183.3	165.3	155.1	147.8	141.8	140.6
77.5°	167.7	185.1	190.5	176.7	154.5	135.8	125.6	117.8	113.0	110.0	109.4
80°	121.4	132.8	135.2	123.2	110.0	98.6	91.4	84.7	81.7	78.7	77.5
82.5°	75.7	85.9	86.5	78.1	71.5	63.7	57.7	55.3	53.5	51.7	51.7
85°	40.9	46.3	45.7	42.1	39.1	34.9	32.5	31.3	30.1	28.8	28.8
87.5°	15.6	17.4	17.4	18.0	15.6	13.8	12.6	13.2	12.6	12.6	12.6
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°	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7	1396.7
2.5°	1379.9	1377.5	1371.5	1361.9	1356.5	1344.4	1345.1	1347.5	1348.1	1346.3	1345.7
5°	1355.3	1348.1	1338.4	1326.4	1318.0	1309.0	1303.0	1306.6	1304.8	1304.2	1301.2
7.5°	1328.2	1318.6	1306.6	1294.6	1284.9	1272.9	1268.1	1263.9	1259.1	1258.5	1256.1
10°	1301.2	1289.2	1275.3	1257.9	1244.7	1229.7	1215.2	1207.4	1198.4	1191.8	1178.0
12.5°	1269.3	1248.9	1233.3	1215.2	1191.2	1167.2	1150.9	1128.7	1116.7	1104.6	1088.4
15°	1232.7	1206.2	1179.2	1143.1	1122.1	1088.4	1064.4	1048.2	1029.5	1017.5	1003.7
17.5°	1180.4	1152.7	1118.5	1077.6	1040.3	1006.1	988.7	967.6	959.8	933.4	931.0
20°	1128.7	1087.2	1044.5	1003.1	961.6	937.0	914.7	900.9	886.5	869.7	864.2
22.5°	1070.4	1016.3	971.2	932.8	894.9	867.9	857.0	841.4	827.6	818.0	809.0
25°	999.5	949.6	903.9	867.9	833.6	813.2	799.3	787.9	781.9	771.1	767.5
27.5°	934.0	884.1	847.4	813.8	786.1	768.1	756.1	745.8	738.0	736.2	732.0
30°	867.3	824.6	789.7	760.9	736.2	726.6	715.2	710.4	705.6	703.2	698.4
32.5°	807.2	769.3	738.6	711.0	696.6	687.6	681.5	676.7	673.1	671.9	670.7
35°	752.5	717.6	692.4	672.5	661.7	652.1	649.1	644.9	643.1	642.5	641.9
37.5°	704.4	671.9	652.7	635.3	627.4	618.4	619.0	617.2	616.0	612.4	614.8
40°	655.7	630.5	610.6	596.8	591.4	588.4	587.2	586.0	586.6	586.6	586.0
42.5°	611.2	589.0	576.4	563.1	560.7	558.3	558.3	556.5	557.1	560.1	561.3
45°	571.0	553.5	542.1	531.3	531.3	528.3	530.7	530.1	531.9	533.7	534.9
47.5°	530.7	515.1	506.6	501.2	498.8	498.8	500.6	503.6	504.8	505.4	506.6
50°	490.4	479.0	471.8	468.8	468.2	471.2	473.0	472.4	474.2	476.6	478.4
52.5°	455.0	444.7	439.9	438.7	438.7	441.1	441.7	443.5	444.7	444.7	447.1
55°	418.3	411.1	407.5	406.9	407.5	408.7	411.1	412.3	411.7	412.9	412.9
57.5°	381.6	376.2	374.4	376.2	376.2	378.6	378.6	378.6	378.0	380.4	379.8
60°	347.4	341.4	343.2	342.6	344.4	344.4	346.2	346.2	344.4	346.8	348.0
62.5°	313.1	311.9	309.5	309.5	311.3	311.9	310.1	311.9	312.5	314.3	315.5
65°	277.1	272.9	274.7	274.1	275.9	278.9	276.5	276.5	278.3	280.7	281.9
67.5°	242.8	239.2	241.0	241.6	241.6	242.8	241.0	242.2	244.6	247.6	249.4
70°	207.9	206.7	207.3	206.7	206.7	209.8	210.4	209.8	212.2	215.2	215.8
72.5°	172.5	173.7	172.5	173.7	174.9	173.1	173.7	175.5	177.9	179.7	182.7
75°	140.0	138.2	138.8	141.8	141.2	142.4	141.8	143.6	147.8	146.6	147.2
77.5°	108.2	107.6	108.2	108.8	109.4	111.2	110.6	113.6	114.2	114.8	116.0
80°	76.9	77.5	78.1	79.3	81.1	80.5	81.7	82.3	84.7	82.3	84.1
82.5°	52.3	51.7	52.9	52.9	54.7	55.9	54.1	54.1	54.1	53.5	53.5
85°	28.8	30.7	30.7	30.7	29.4	29.4	30.1	29.4	29.4	29.4	28.8
87.5°	12.6	12.6	12.0	11.4	12.0	11.4	11.4	10.8	10.2	10.2	9.6
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: P242120

CATALOG NUMBER: S121DR-S880D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1396.7	1396.7	1396.7	1396.7
2.5°	1342.0	1345.1	1341.4	1339.0
5°	1298.2	1298.2	1294.6	1293.4
7.5°	1248.9	1249.5	1242.9	1238.1
10°	1175.0	1171.4	1161.7	1156.3
12.5°	1076.4	1081.8	1067.4	1056.6
15°	990.5	975.4	981.4	974.8
17.5°	918.3	913.5	906.9	907.5
20°	855.2	851.6	848.0	848.6
22.5°	805.3	802.3	801.1	796.9
25°	763.9	765.1	762.1	762.1
27.5°	729.6	727.8	726.0	723.6
30°	697.2	697.8	696.0	694.8
32.5°	668.3	668.9	667.7	665.9
35°	640.1	639.5	640.1	638.3
37.5°	614.2	613.6	614.2	616.6
40°	587.8	588.4	586.6	589.0
42.5°	561.9	562.5	562.5	561.3
45°	533.7	535.5	536.1	537.3
47.5°	506.0	509.1	507.8	508.5
50°	478.4	477.8	477.8	477.2
52.5°	447.7	445.9	445.3	445.9
55°	411.1	413.5	413.5	413.5
57.5°	381.0	381.6	383.4	381.0
60°	350.4	350.4	351.0	355.8
62.5°	316.1	316.7	317.9	318.5
65°	283.1	284.9	284.3	283.7
67.5°	250.6	250.6	251.2	250.0
70°	217.0	217.0	217.0	220.0
72.5°	182.1	182.1	182.7	183.9
75°	149.7	149.7	149.7	147.8
77.5°	114.2	114.8	114.8	115.4
80°	82.9	82.3	82.3	81.7
82.5°	52.3	52.9	52.3	51.7
85°	28.8	29.4	27.6	27.6
87.5°	10.2	10.2	9.6	10.8
90°	0.0	0.0	0.0	0.0

(END OF REPORT)