

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: P243006

Luminaire Tested: **S121DR-H1025D940-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243006
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-H1025D940-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3611.0 lumens
Efficiency: N/A
Efficacy: 95.8 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

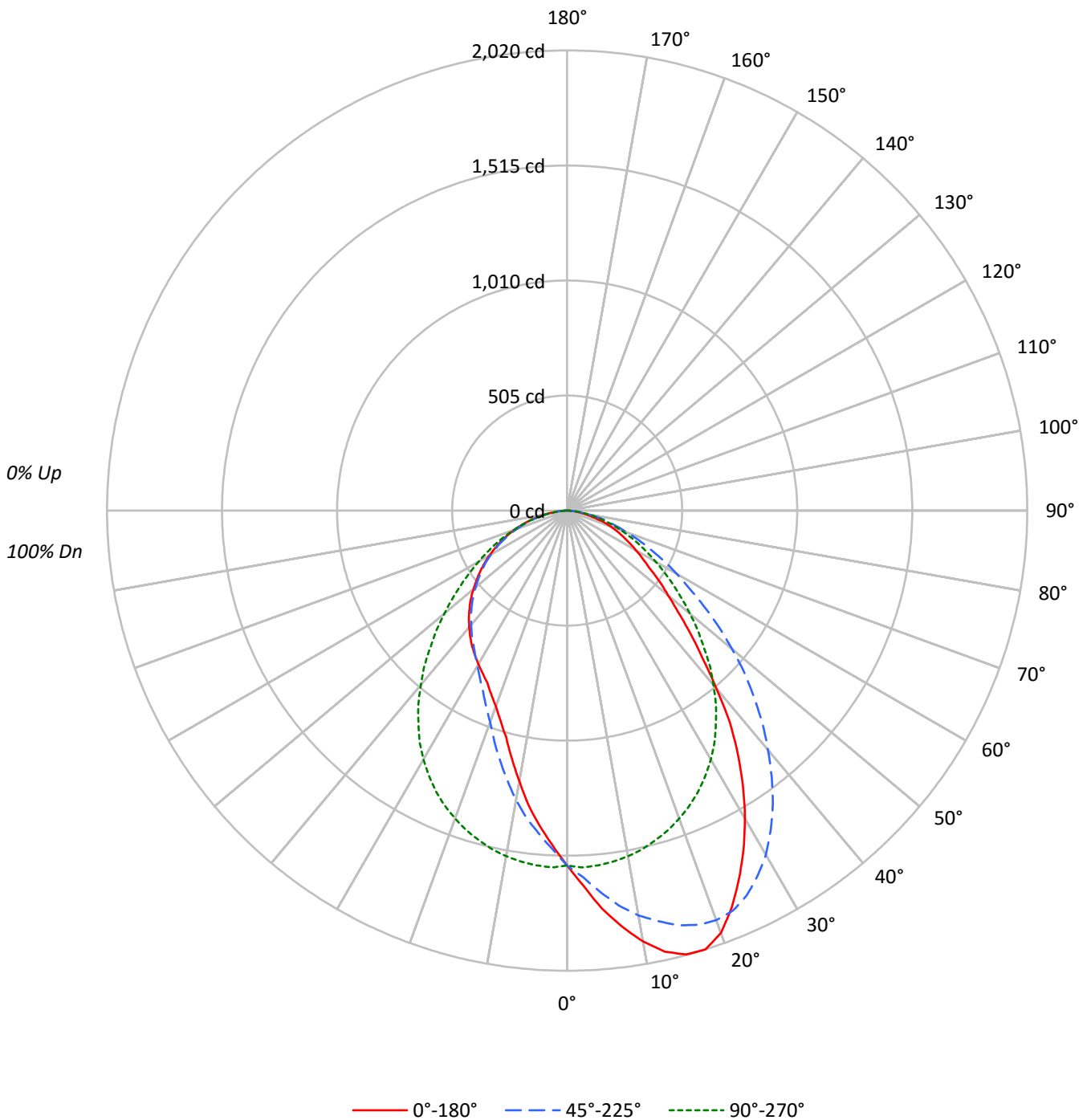
Input Watts (W): 37.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	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°	46163	46163	46163
5°	52160	46488	41301
10°	57782	46346	36306
15°	61874	45945	31669
20°	62218	45348	28835
25°	58357	44495	27191
30°	53390	43153	26652
35°	47279	41177	26318
40°	39398	38621	25861
45°	32114	35534	25389
50°	26657	32382	24749
55°	22807	29352	24104
60°	20664	26572	23342
65°	19084	24188	22512
70°	17604	21788	21190
75°	14218	19313	19530
80°	11347	15630	16688
85°	8533	11525	13633



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	148.8	4.1
10°-20°	426.4	11.8
20°-30°	620.9	17.2
30°-40°	692.1	19.2
40°-50°	639.9	17.7
50°-60°	509.8	14.1
60°-70°	348.9	9.7
70°-80°	181.2	5.0
80°-90°	42.9	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°	1196.1	33.1
0°-40°	1888.2	52.3
0°-60°	3038.0	84.1
0°-90°	3611.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3611.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1558	1558	1558	1558	1558	
5°	1754	1681	1563	1424	1389	172
15°	2017	1885	1498	1137	1032	565
25°	1785	1865	1361	875	832	818
35°	1307	1574	1138	716	728	811
45°	766	1160	848	592	606	597
55°	442	733	568	455	467	404
65°	272	404	345	312	321	270
75°	124	182	169	159	171	136
85°	25	34	34	36	40	31
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°	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0
2.5°	1648.3	1648.3	1643.9	1645.8	1643.3	1638.9	1632.0	1624.4	1615.0	1611.3	1609.4
5°	1753.7	1756.2	1753.0	1746.8	1745.5	1740.5	1725.4	1716.6	1696.6	1680.9	1675.9
7.5°	1841.5	1845.8	1845.8	1834.6	1829.5	1817.0	1806.3	1791.9	1766.8	1749.3	1734.8
10°	1920.5	1922.4	1915.5	1909.2	1899.2	1889.1	1870.9	1852.7	1825.8	1804.5	1780.6
12.5°	1983.2	1987.0	1982.0	1971.9	1960.0	1946.8	1924.2	1901.0	1874.7	1845.8	1820.1
15°	2017.1	2022.7	2023.3	2015.2	2006.4	1990.7	1974.4	1949.3	1920.5	1884.7	1842.7
17.5°	2019.6	2022.1	2024.0	2017.7	2012.1	2006.4	1990.1	1969.4	1941.8	1906.7	1867.8
20°	1973.2	1978.8	1985.1	1979.4	1982.0	1982.0	1975.1	1964.4	1941.8	1913.6	1876.0
22.5°	1886.6	1899.8	1907.9	1913.6	1919.2	1927.4	1935.5	1930.5	1921.7	1901.0	1867.2
25°	1785.0	1795.7	1811.4	1816.4	1820.8	1844.6	1859.0	1869.1	1869.1	1864.7	1842.1
27.5°	1677.1	1684.0	1697.2	1714.8	1731.1	1745.5	1775.6	1794.4	1809.5	1809.5	1797.6
30°	1560.5	1570.5	1586.2	1598.1	1618.2	1647.7	1672.7	1695.3	1729.8	1744.9	1742.4
32.5°	1437.5	1447.6	1463.9	1473.9	1502.8	1526.6	1565.5	1600.6	1640.1	1662.7	1676.5
35°	1307.1	1307.7	1335.3	1351.6	1376.7	1406.2	1453.8	1493.4	1536.6	1574.3	1603.8
37.5°	1172.9	1172.2	1191.7	1220.5	1240.6	1282.0	1330.9	1374.8	1435.0	1475.2	1521.6
40°	1018.6	1031.7	1048.1	1074.4	1108.9	1157.8	1204.2	1261.3	1321.5	1371.7	1421.2
42.5°	880.6	891.3	917.6	947.1	984.1	1025.5	1081.9	1145.3	1204.2	1269.5	1324.6
45°	766.4	772.1	787.8	811.6	850.5	897.5	956.5	1023.6	1093.2	1159.7	1221.2
47.5°	661.1	678.0	686.2	708.1	736.3	780.2	841.7	901.9	982.2	1056.2	1123.3
50°	578.3	581.4	595.8	612.1	645.4	678.0	724.4	786.5	861.1	944.6	1012.9
52.5°	510.5	509.3	521.2	535.6	558.8	593.3	633.5	693.7	757.0	839.8	914.5
55°	441.5	447.8	453.5	467.9	488.6	514.9	548.8	599.6	659.2	732.6	811.0
57.5°	393.9	394.5	397.6	409.6	423.4	444.1	476.7	519.9	573.3	637.2	713.1
60°	348.7	349.4	355.0	358.8	368.2	385.7	410.8	446.6	493.6	555.1	621.6
62.5°	309.8	310.5	313.6	317.4	326.1	333.0	354.4	385.1	423.4	477.9	535.0
65°	272.2	272.8	272.8	277.8	283.5	289.8	304.8	324.3	361.3	404.5	455.3
67.5°	235.8	239.6	238.3	242.1	247.1	250.3	260.9	278.5	303.6	339.9	383.8
70°	203.2	202.6	204.5	206.3	208.2	213.2	220.1	232.1	253.4	279.1	318.0
72.5°	168.1	164.3	166.8	169.3	172.5	176.2	181.9	190.7	207.0	227.7	256.5
75°	124.2	122.3	126.1	126.7	132.3	137.4	143.6	152.4	164.3	181.9	200.7
77.5°	90.3	92.8	94.1	95.3	96.0	101.6	108.5	116.0	122.9	139.2	153.7
80°	66.5	66.5	67.1	68.4	69.6	70.9	75.3	80.3	85.9	96.0	110.4
82.5°	46.4	45.8	45.8	46.4	47.0	48.3	50.2	52.1	57.1	62.1	69.6
85°	25.1	25.7	26.3	25.1	25.7	26.3	27.6	29.5	30.7	34.5	37.6
87.5°	8.8	10.7	10.0	10.0	10.7	10.7	10.7	11.9	11.9	11.9	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°	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0
2.5°	1607.5	1605.6	1600.6	1590.6	1583.7	1571.1	1568.6	1568.0	1556.7	1539.8	1538.5
5°	1667.1	1652.7	1640.8	1623.2	1605.6	1584.3	1571.8	1563.0	1542.9	1517.8	1506.5
7.5°	1721.7	1701.0	1676.5	1648.9	1623.2	1593.1	1571.1	1553.6	1524.1	1492.1	1472.7
10°	1765.6	1739.9	1709.1	1672.1	1637.0	1597.5	1566.7	1540.4	1501.5	1462.0	1435.7
12.5°	1795.7	1766.8	1731.7	1688.4	1645.8	1600.6	1556.1	1522.8	1473.9	1428.1	1394.3
15°	1829.5	1781.9	1745.5	1696.6	1646.4	1592.5	1545.4	1497.8	1441.3	1389.9	1346.0
17.5°	1837.7	1793.8	1750.5	1696.6	1644.5	1578.7	1524.1	1471.4	1408.7	1345.3	1302.7
20°	1845.2	1795.0	1741.7	1683.4	1628.8	1561.1	1499.6	1438.2	1365.4	1297.0	1243.7
22.5°	1839.6	1790.7	1731.1	1665.2	1606.3	1536.6	1470.2	1402.4	1320.9	1249.4	1189.2
25°	1823.3	1778.1	1716.6	1644.5	1573.6	1502.8	1433.2	1361.0	1272.6	1189.8	1123.3
27.5°	1790.0	1749.9	1690.9	1614.4	1539.8	1461.4	1388.6	1313.4	1218.6	1134.0	1063.1
30°	1745.5	1713.5	1653.9	1577.4	1496.5	1412.5	1337.8	1261.3	1162.8	1070.6	995.4
32.5°	1684.0	1661.5	1610.0	1535.4	1448.2	1359.1	1282.6	1204.9	1099.5	1011.7	935.2
35°	1615.0	1604.4	1558.6	1484.0	1393.6	1300.2	1218.0	1138.4	1041.2	948.3	874.9
37.5°	1534.1	1541.7	1500.3	1426.3	1332.8	1237.5	1150.9	1073.8	975.3	886.2	814.1
40°	1453.8	1465.1	1433.8	1364.8	1267.6	1169.1	1081.3	998.5	906.9	828.5	757.0
42.5°	1364.8	1387.4	1362.9	1295.8	1201.1	1097.0	1005.4	928.3	841.1	768.9	706.2
45°	1270.1	1298.9	1288.9	1220.5	1127.1	1024.8	928.3	848.0	777.7	713.8	656.7
47.5°	1174.1	1207.4	1203.0	1145.9	1056.2	951.5	856.1	777.1	712.5	661.1	613.4
50°	1075.6	1109.5	1110.1	1059.3	975.9	876.2	774.0	702.5	651.0	605.9	567.0
52.5°	979.7	1013.6	1014.2	974.7	891.3	794.0	700.0	634.7	590.8	555.7	523.1
55°	879.3	918.8	922.6	884.4	810.3	716.9	630.3	568.2	529.4	506.8	478.6
57.5°	777.7	820.4	827.9	797.2	725.7	638.5	565.7	506.2	474.8	459.1	437.8
60°	683.0	725.0	737.0	701.8	642.9	568.2	498.6	448.4	423.4	410.8	395.8
62.5°	595.8	637.9	644.1	614.0	555.7	493.0	440.3	394.5	373.8	364.4	352.5
65°	510.5	548.2	556.3	529.4	476.7	424.6	378.2	345.0	326.8	318.6	311.1
67.5°	432.1	467.3	472.9	448.4	404.5	360.0	326.1	297.3	284.7	274.1	271.0
70°	358.1	390.1	395.1	370.7	336.2	299.8	271.6	251.5	239.6	233.3	228.9
72.5°	289.8	314.9	319.2	304.2	277.2	245.2	223.3	206.3	198.8	193.2	191.3
75°	226.4	250.9	251.5	238.3	216.4	194.4	177.5	168.7	159.9	154.3	153.0
77.5°	173.7	187.5	189.4	182.5	161.2	147.4	134.2	127.9	124.8	119.2	119.2
80°	124.2	132.3	135.5	125.4	115.4	103.5	96.6	91.6	89.1	85.3	85.3
82.5°	77.1	84.0	87.8	80.3	75.3	69.0	64.0	60.8	59.0	57.1	56.4
85°	42.0	47.0	47.0	44.5	40.1	37.0	35.1	33.9	33.2	32.6	32.0
87.5°	15.1	18.8	16.9	17.6	15.7	15.1	14.4	14.4	15.1	13.8	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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0	1558.0
2.5°	1530.4	1527.2	1517.8	1509.0	1502.1	1487.1	1484.0	1485.2	1485.2	1485.8	1478.9
5°	1493.4	1480.2	1465.1	1451.3	1440.7	1423.7	1414.3	1411.8	1409.9	1406.2	1399.3
7.5°	1451.3	1436.3	1415.0	1402.4	1379.8	1361.0	1347.9	1339.1	1333.4	1325.3	1314.0
10°	1408.7	1386.7	1362.9	1337.8	1315.2	1290.2	1269.5	1259.4	1247.5	1239.3	1226.8
12.5°	1366.0	1335.3	1302.7	1273.8	1243.1	1213.6	1192.3	1178.5	1157.2	1145.3	1132.1
15°	1310.2	1272.6	1245.0	1194.8	1179.8	1137.1	1111.4	1100.7	1080.0	1076.3	1055.6
17.5°	1257.5	1214.3	1173.5	1131.5	1091.3	1061.8	1039.9	1026.1	1009.8	999.8	986.0
20°	1191.7	1146.5	1097.6	1053.7	1019.8	988.5	974.7	957.1	947.7	937.7	927.6
22.5°	1129.0	1073.8	1024.8	989.1	954.6	928.9	913.8	901.9	893.8	883.7	876.8
25°	1061.8	1010.4	965.3	928.3	895.0	874.9	862.4	855.5	850.5	843.0	838.6
27.5°	997.9	945.8	901.3	873.1	846.1	828.5	822.3	816.0	809.7	807.2	806.6
30°	929.5	881.8	845.5	821.0	796.5	787.1	784.0	777.7	779.0	779.6	777.7
32.5°	871.8	825.4	797.8	777.1	758.3	751.4	750.8	748.2	748.9	752.0	750.8
35°	812.2	777.7	750.1	733.2	721.3	716.3	716.9	717.5	721.3	721.9	724.4
37.5°	761.4	728.2	710.0	693.7	688.0	688.0	688.7	689.3	692.4	696.2	697.4
40°	711.2	684.3	668.6	657.9	654.8	654.8	657.3	660.4	662.3	666.1	666.7
42.5°	666.1	643.5	631.6	620.9	622.2	625.3	625.9	627.8	632.8	633.5	634.7
45°	621.6	604.6	592.7	589.6	589.6	592.1	595.2	596.5	600.2	600.9	602.1
47.5°	583.3	565.7	557.0	553.8	555.7	558.8	563.2	565.1	568.2	567.6	570.8
50°	540.6	526.2	519.3	518.1	519.3	525.0	526.8	531.2	534.4	536.3	537.5
52.5°	499.9	488.6	485.5	484.8	487.3	491.1	493.6	498.0	501.8	501.8	501.1
55°	461.0	451.0	447.2	450.3	453.5	455.3	460.4	462.9	466.6	467.3	466.6
57.5°	421.5	412.7	411.4	412.7	419.0	422.7	425.9	425.9	427.8	428.4	430.3
60°	380.7	375.1	373.8	376.9	383.8	386.4	388.2	388.9	391.4	390.1	393.9
62.5°	342.5	336.8	339.3	342.5	345.0	348.7	350.0	353.1	352.5	353.7	355.6
65°	302.9	299.8	300.4	304.2	307.3	312.3	312.3	312.3	315.5	315.5	316.7
67.5°	264.7	262.8	265.3	268.4	269.1	272.2	271.6	275.3	277.8	279.1	280.4
70°	227.7	226.4	226.4	229.6	232.7	233.9	235.2	237.7	238.3	240.2	243.4
72.5°	192.6	188.8	189.4	193.8	193.8	196.3	199.4	199.4	203.2	203.8	207.0
75°	154.3	153.0	154.3	156.8	159.9	159.3	163.1	162.4	163.7	168.1	168.7
77.5°	120.4	118.5	121.7	122.9	123.6	124.2	125.4	128.6	131.1	133.0	133.6
80°	86.6	85.9	89.1	90.3	89.7	90.9	92.8	96.0	96.0	97.2	99.1
82.5°	58.3	57.1	59.0	60.8	62.1	62.7	62.7	64.0	64.6	65.9	65.9
85°	33.2	33.2	34.5	35.1	36.4	35.8	37.0	36.4	37.6	38.9	38.3
87.5°	14.4	14.4	14.4	14.4	15.1	15.1	15.7	15.7	15.1	15.7	14.4
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: P243006

CATALOG NUMBER: S121DR-H1025D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1558.0	1558.0	1558.0	1558.0
2.5°	1476.4	1477.7	1474.5	1471.4
5°	1398.7	1394.3	1389.9	1388.6
7.5°	1311.5	1311.5	1300.8	1303.3
10°	1218.0	1214.3	1206.1	1206.7
12.5°	1127.1	1123.9	1119.6	1117.7
15°	1044.9	1046.8	1049.9	1032.4
17.5°	980.3	975.3	972.8	969.7
20°	922.6	920.1	915.1	914.5
22.5°	878.1	872.4	871.2	871.8
25°	835.4	835.4	835.4	831.7
27.5°	805.3	805.3	803.4	804.1
30°	779.0	780.2	778.4	779.0
32.5°	753.9	754.5	753.3	752.6
35°	725.7	727.6	726.9	727.6
37.5°	698.7	700.0	698.7	698.7
40°	668.0	671.1	670.5	668.6
42.5°	637.2	637.2	639.1	638.5
45°	605.2	604.0	604.0	605.9
47.5°	571.4	573.9	572.6	573.3
50°	540.0	539.4	537.5	536.9
52.5°	503.0	504.3	503.6	500.5
55°	467.3	467.3	466.6	466.6
57.5°	429.0	430.9	430.3	430.3
60°	392.6	393.9	394.5	393.9
62.5°	355.6	356.2	355.6	356.2
65°	319.9	319.9	319.2	321.1
67.5°	281.0	281.6	281.0	282.2
70°	244.0	245.2	245.9	244.6
72.5°	208.9	207.6	208.2	207.0
75°	170.0	170.6	170.0	170.6
77.5°	133.6	134.2	133.6	134.2
80°	98.5	98.5	99.1	97.8
82.5°	66.5	66.5	68.4	66.5
85°	38.9	38.9	37.6	40.1
87.5°	15.1	15.1	15.1	15.1
90°	0.0	0.0	0.0	0.0

(END OF REPORT)