

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: P242145

Luminaire Tested: **S121DR-S880D940-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242145
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-S880D940-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3256.2 lumens
Efficiency: N/A
Efficacy: 93.6 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

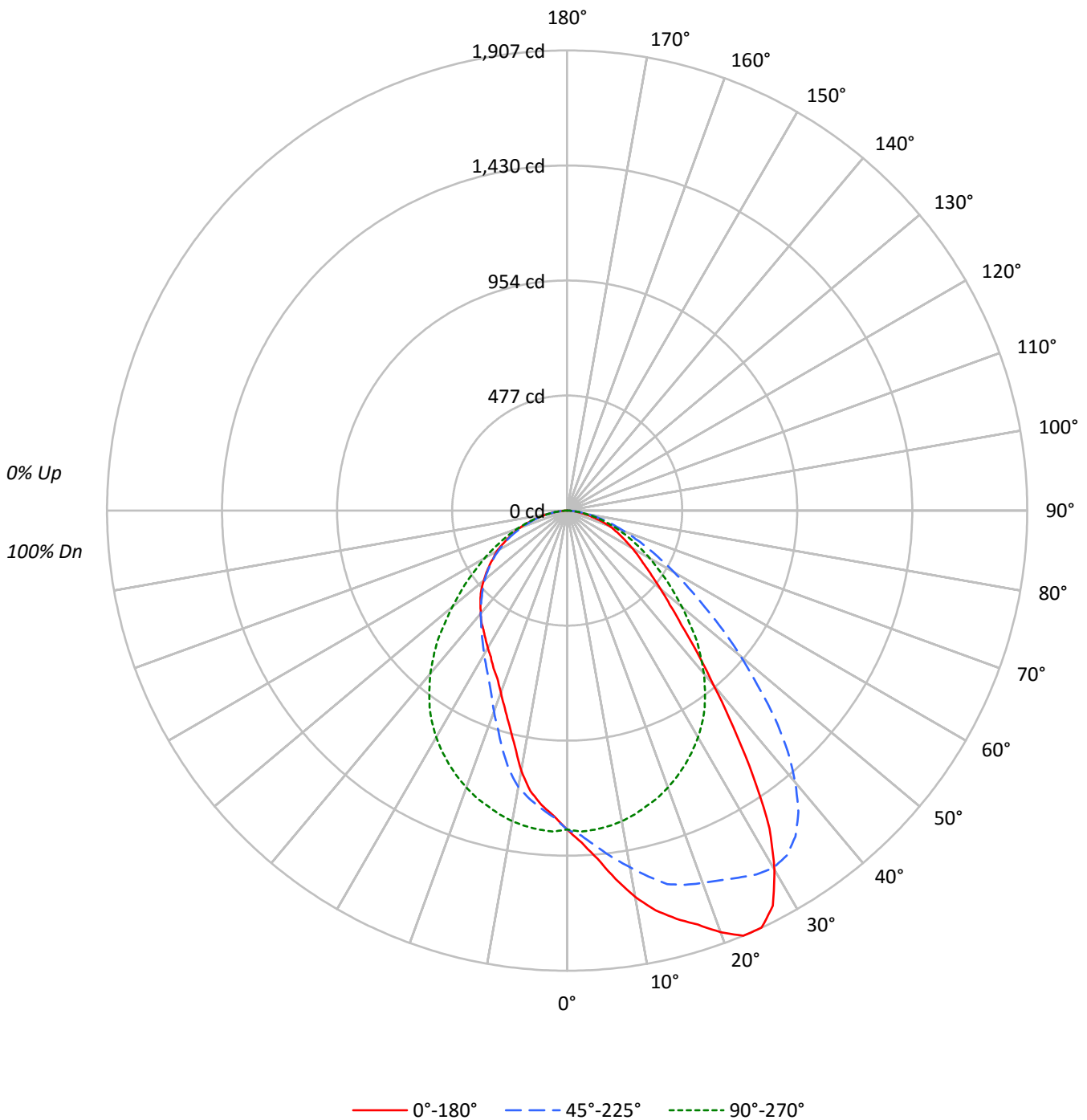
Input Watts (W): 34.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	39153	39153	39153
5°	43091	39472	36393
10°	48927	39329	32915
15°	53721	38896	28291
20°	58626	38509	25316
25°	62348	37904	23571
30°	58789	37118	22488
35°	48578	35951	21840
40°	36420	34088	21552
45°	28066	31783	21299
50°	23274	28593	20812
55°	20090	25963	20209
60°	18465	23419	19947
65°	17065	21166	18817
70°	16157	19016	18028
75°	13280	16794	16016
80°	10477	13685	13190
85°	8125	10063	8907



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	127.1	3.9
10°-20°	370.6	11.4
20°-30°	567.5	17.4
30°-40°	647.6	19.9
40°-50°	581.1	17.8
50°-60°	455.8	14.0
60°-70°	310.1	9.5
70°-80°	159.7	4.9
80°-90°	36.8	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°	1065.2	32.7
0°-40°	1712.8	52.6
0°-60°	2749.6	84.4
0°-90°	3256.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3256.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1321	1321	1321	1321	1321	
5°	1449	1398	1327	1238	1224	144
15°	1751	1603	1268	1030	922	499
25°	1907	1678	1159	769	721	860
35°	1343	1649	994	617	604	833
45°	670	1217	758	500	508	531
55°	389	694	503	387	391	354
65°	243	370	302	264	268	242
75°	116	163	147	135	140	125
85°	24	32	30	28	26	29
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°	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4
2.5°	1377.1	1377.1	1379.4	1378.8	1376.6	1372.6	1369.2	1365.2	1355.0	1348.1	1354.4
5°	1448.8	1451.6	1454.5	1453.9	1445.4	1438.0	1427.2	1424.3	1406.1	1397.6	1394.8
7.5°	1539.7	1539.2	1540.3	1530.7	1523.3	1515.9	1501.7	1484.0	1462.4	1450.5	1439.1
10°	1626.2	1631.3	1629.0	1617.1	1605.7	1597.7	1575.0	1553.4	1526.7	1501.1	1486.9
12.5°	1696.7	1693.8	1703.5	1692.1	1678.5	1663.7	1641.5	1622.2	1587.5	1552.8	1523.8
15°	1751.3	1748.4	1749.6	1741.0	1726.8	1713.7	1691.0	1670.5	1637.5	1602.9	1572.2
17.5°	1799.0	1801.9	1796.8	1786.5	1767.2	1751.8	1723.4	1695.5	1660.9	1626.2	1596.0
20°	1859.3	1862.1	1852.5	1837.7	1818.9	1792.8	1763.2	1723.4	1684.7	1642.1	1604.6
22.5°	1907.1	1905.4	1901.9	1887.7	1867.8	1843.4	1800.7	1757.0	1710.9	1658.0	1609.7
25°	1907.1	1909.3	1911.0	1903.6	1890.6	1870.1	1841.1	1795.0	1743.3	1678.5	1610.8
27.5°	1845.7	1855.9	1863.3	1863.3	1860.4	1859.9	1842.8	1813.8	1765.5	1700.1	1625.0
30°	1718.3	1731.9	1743.3	1760.9	1782.0	1795.6	1800.7	1789.4	1764.3	1709.2	1631.3
32.5°	1561.4	1560.2	1583.5	1612.0	1653.5	1682.5	1711.5	1728.5	1727.4	1694.4	1629.6
35°	1343.0	1358.9	1386.8	1426.6	1480.0	1527.8	1590.9	1623.9	1650.1	1648.9	1607.4
37.5°	1130.4	1132.6	1163.9	1218.5	1265.7	1339.6	1422.1	1490.9	1554.0	1574.4	1560.8
40°	941.6	957.5	978.5	1024.0	1071.2	1136.0	1240.7	1332.8	1410.7	1470.9	1487.4
42.5°	796.0	804.6	825.0	864.8	906.9	984.2	1061.0	1159.4	1257.7	1353.8	1403.3
45°	669.8	677.8	696.5	724.4	763.6	824.5	903.5	999.0	1104.2	1216.8	1287.3
47.5°	577.7	580.5	594.7	615.8	652.7	697.1	760.8	853.5	959.8	1069.5	1173.0
50°	504.9	509.5	519.1	535.6	562.9	604.4	655.0	725.0	823.3	937.0	1042.2
52.5°	441.2	444.6	456.0	465.1	486.1	521.4	565.2	628.9	711.9	814.2	922.8
55°	388.9	392.3	398.0	408.2	424.7	448.6	486.1	536.8	607.8	694.3	796.0
57.5°	349.1	350.8	352.0	358.8	371.9	391.2	423.0	462.8	518.0	597.0	687.4
60°	311.6	311.0	315.6	320.7	328.6	340.6	363.9	399.7	449.2	513.4	597.6
62.5°	274.1	276.9	279.7	283.7	288.8	295.7	314.4	341.2	380.4	435.5	504.9
65°	243.4	243.9	246.2	246.8	253.0	259.8	274.1	292.3	324.7	369.6	427.0
67.5°	213.8	214.4	213.8	215.5	218.3	224.0	231.4	246.2	271.2	307.6	357.6
70°	186.5	184.8	182.5	185.4	188.2	191.0	196.2	207.5	226.3	253.6	295.1
72.5°	150.1	151.2	152.4	153.5	154.1	158.1	162.6	170.6	185.4	206.4	238.2
75°	116.0	116.0	117.7	118.8	124.0	125.1	130.2	135.9	147.8	162.6	187.6
77.5°	85.3	84.7	87.6	88.1	91.0	94.4	97.2	102.9	112.0	124.5	141.0
80°	61.4	62.0	61.4	61.4	63.1	65.4	69.4	72.2	78.5	86.4	98.4
82.5°	40.9	40.9	41.5	41.5	43.2	43.2	45.5	47.8	51.7	56.9	65.4
85°	23.9	23.9	23.3	23.3	23.9	23.9	26.2	27.9	28.4	31.8	34.7
87.5°	10.2	10.2	9.7	10.2	9.7	10.2	9.7	10.8	11.4	11.9	13.1
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°	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4
2.5°	1352.7	1351.0	1350.4	1344.2	1337.9	1330.5	1329.4	1331.6	1322.0	1310.0	1309.5
5°	1387.9	1381.7	1372.6	1360.6	1350.4	1336.8	1329.9	1327.1	1312.3	1295.3	1291.8
7.5°	1427.2	1411.8	1395.3	1377.1	1358.9	1339.0	1326.5	1319.1	1298.7	1277.6	1269.1
10°	1464.7	1444.8	1419.8	1391.9	1366.3	1339.0	1320.3	1307.2	1282.2	1256.0	1242.9
12.5°	1507.9	1474.9	1439.7	1405.0	1373.7	1338.5	1310.0	1290.1	1261.1	1233.3	1213.9
15°	1539.2	1491.4	1464.1	1414.7	1375.4	1332.8	1298.1	1268.0	1236.1	1205.4	1186.1
17.5°	1563.6	1526.1	1478.3	1423.8	1370.9	1324.8	1281.6	1248.1	1206.0	1172.4	1151.4
20°	1571.6	1533.5	1484.6	1424.9	1372.0	1312.9	1261.7	1221.3	1176.4	1135.5	1106.5
22.5°	1568.7	1525.5	1475.5	1416.9	1363.5	1293.5	1240.1	1191.8	1141.7	1098.0	1058.2
25°	1562.5	1512.5	1457.3	1402.2	1342.4	1273.6	1212.2	1159.4	1099.1	1051.3	1003.6
27.5°	1559.1	1493.7	1431.7	1372.0	1315.2	1248.6	1182.7	1123.5	1057.0	999.0	937.6
30°	1557.9	1480.0	1402.2	1332.8	1280.5	1212.8	1147.4	1084.9	1007.0	941.6	879.0
32.5°	1555.7	1468.7	1377.1	1294.1	1234.4	1173.6	1104.2	1042.2	954.1	885.9	818.8
35°	1540.3	1448.8	1348.1	1253.7	1183.8	1120.7	1058.7	993.9	902.4	829.0	764.8
37.5°	1507.3	1427.2	1319.7	1213.4	1129.8	1065.5	1008.1	937.6	848.9	768.7	709.0
40°	1458.4	1393.1	1289.0	1173.6	1075.2	1004.7	943.9	881.3	789.8	713.0	659.0
42.5°	1394.8	1344.2	1246.4	1127.0	1022.3	943.3	881.3	819.3	735.2	661.3	612.9
45°	1311.2	1279.9	1194.0	1076.3	971.2	879.6	812.5	758.5	680.6	612.9	568.6
47.5°	1218.5	1204.8	1133.2	1020.1	909.2	820.5	742.0	685.2	624.3	566.9	527.7
50°	1106.5	1117.3	1061.0	956.9	849.5	758.5	681.7	620.3	567.5	523.1	488.4
52.5°	1001.9	1027.4	982.0	883.0	786.9	692.5	615.2	558.9	517.4	481.0	450.9
55°	885.3	922.3	895.0	809.7	714.2	630.6	553.2	502.6	466.8	439.0	413.4
57.5°	773.3	825.6	805.7	728.9	647.6	566.3	493.5	443.5	417.9	397.4	375.8
60°	673.8	721.5	718.7	653.3	572.0	499.8	440.1	395.2	372.4	358.8	340.0
62.5°	584.5	632.8	628.3	569.2	504.9	437.8	387.2	346.3	329.8	315.0	303.1
65°	493.5	535.0	537.3	493.5	431.6	377.5	334.3	301.9	287.1	278.0	269.5
67.5°	411.1	451.5	455.4	420.8	366.2	319.5	287.1	259.8	246.8	238.8	232.6
70°	338.9	371.9	379.3	350.3	304.2	267.8	240.5	219.5	210.9	203.0	200.7
72.5°	274.6	301.4	306.5	279.7	245.6	218.3	197.3	181.4	175.1	167.2	165.5
75°	218.3	237.1	237.7	220.0	194.5	173.4	156.4	146.7	139.9	134.2	133.1
77.5°	158.6	175.1	180.2	167.2	146.1	128.5	118.8	111.4	106.9	104.1	103.5
80°	114.9	125.7	127.9	116.6	104.1	93.2	86.4	80.2	77.3	74.5	73.3
82.5°	71.6	81.3	81.9	73.9	67.7	60.3	54.6	52.3	50.6	48.9	48.9
85°	38.7	43.8	43.2	39.8	37.0	33.0	30.7	29.6	28.4	27.3	27.3
87.5°	14.8	16.5	16.5	17.1	14.8	13.1	11.9	12.5	11.9	11.9	11.9
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°	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4	1321.4
2.5°	1305.5	1303.2	1297.5	1288.4	1283.3	1271.9	1272.5	1274.8	1275.4	1273.6	1273.1
5°	1282.2	1275.4	1266.3	1254.9	1246.9	1238.4	1232.7	1236.1	1234.4	1233.8	1231.0
7.5°	1256.6	1247.5	1236.1	1224.7	1215.7	1204.3	1199.7	1195.8	1191.2	1190.6	1188.4
10°	1231.0	1219.6	1206.6	1190.1	1177.6	1163.3	1149.7	1142.3	1133.8	1127.5	1114.4
12.5°	1200.9	1181.5	1166.8	1149.7	1127.0	1104.2	1088.9	1067.8	1056.4	1045.1	1029.7
15°	1166.2	1141.2	1115.6	1081.5	1061.6	1029.7	1007.0	991.6	974.0	962.6	949.6
17.5°	1116.7	1090.6	1058.2	1019.5	984.2	951.8	935.3	915.4	908.0	883.0	880.8
20°	1067.8	1028.6	988.2	949.0	909.7	886.4	865.4	852.3	838.7	822.8	817.6
22.5°	1012.7	961.5	918.8	882.5	846.6	821.0	810.8	796.0	783.0	773.9	765.3
25°	945.6	898.4	855.2	821.0	788.6	769.3	756.2	745.4	739.7	729.5	726.1
27.5°	883.6	836.4	801.7	769.9	743.7	726.7	715.3	705.6	698.2	696.5	692.5
30°	820.5	780.1	747.1	719.8	696.5	687.4	676.6	672.1	667.5	665.3	660.7
32.5°	763.6	727.8	698.8	672.6	659.0	650.5	644.8	640.2	636.8	635.7	634.5
35°	711.9	678.9	655.0	636.3	626.0	616.9	614.1	610.1	608.4	607.8	607.3
37.5°	666.4	635.7	617.5	601.0	593.6	585.1	585.7	583.9	582.8	579.4	581.7
40°	620.3	596.5	577.7	564.6	559.5	556.7	555.5	554.4	554.9	554.9	554.4
42.5°	578.3	557.2	545.3	532.8	530.5	528.2	528.2	526.5	527.1	529.9	531.1
45°	540.2	523.7	512.9	502.6	502.6	499.8	502.1	501.5	503.2	504.9	506.0
47.5°	502.1	487.3	479.3	474.2	471.9	471.9	473.6	476.5	477.6	478.2	479.3
50°	464.0	453.2	446.3	443.5	442.9	445.8	447.5	446.9	448.6	450.9	452.6
52.5°	430.4	420.8	416.2	415.1	415.1	417.3	417.9	419.6	420.8	420.8	423.0
55°	395.7	388.9	385.5	384.9	385.5	386.6	388.9	390.1	389.5	390.6	390.6
57.5°	361.1	355.9	354.2	355.9	355.9	358.2	358.2	358.2	357.6	359.9	359.4
60°	328.6	323.0	324.7	324.1	325.8	325.8	327.5	327.5	325.8	328.1	329.2
62.5°	296.2	295.1	292.8	292.8	294.5	295.1	293.4	295.1	295.7	297.4	298.5
65°	262.1	258.1	259.8	259.3	261.0	263.8	261.6	261.6	263.3	265.5	266.7
67.5°	229.7	226.3	228.0	228.6	228.6	229.7	228.0	229.1	231.4	234.3	236.0
70°	196.7	195.6	196.2	195.6	195.6	198.4	199.0	198.4	200.7	203.6	204.1
72.5°	163.2	164.3	163.2	164.3	165.5	163.8	164.3	166.0	168.3	170.0	172.9
75°	132.5	130.8	131.3	134.2	133.6	134.8	134.2	135.9	139.9	138.7	139.3
77.5°	102.3	101.8	102.3	102.9	103.5	105.2	104.6	107.5	108.0	108.6	109.7
80°	72.8	73.3	73.9	75.1	76.8	76.2	77.3	77.9	80.2	77.9	79.6
82.5°	49.5	48.9	50.0	50.0	51.7	52.9	51.2	51.2	51.2	50.6	50.6
85°	27.3	29.0	29.0	29.0	27.9	27.9	28.4	27.9	27.9	27.9	27.3
87.5°	11.9	11.9	11.4	10.8	11.4	10.8	10.8	10.2	9.7	9.7	9.1
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: P242145

CATALOG NUMBER: S121DR-S880D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1321.4	1321.4	1321.4	1321.4
2.5°	1269.7	1272.5	1269.1	1266.8
5°	1228.2	1228.2	1224.7	1223.6
7.5°	1181.5	1182.1	1175.9	1171.3
10°	1111.6	1108.2	1099.1	1094.0
12.5°	1018.3	1023.5	1009.8	999.6
15°	937.0	922.8	928.5	922.3
17.5°	868.8	864.3	858.0	858.6
20°	809.1	805.7	802.3	802.9
22.5°	761.9	759.1	757.9	754.0
25°	722.7	723.8	721.0	721.0
27.5°	690.3	688.6	686.9	684.6
30°	659.6	660.1	658.4	657.3
32.5°	632.3	632.8	631.7	630.0
35°	605.6	605.0	605.6	603.8
37.5°	581.1	580.5	581.1	583.4
40°	556.1	556.7	554.9	557.2
42.5°	531.6	532.2	532.2	531.1
45°	504.9	506.6	507.2	508.3
47.5°	478.8	481.6	480.5	481.0
50°	452.6	452.0	452.0	451.5
52.5°	423.6	421.9	421.3	421.9
55°	388.9	391.2	391.2	391.2
57.5°	360.5	361.1	362.8	360.5
60°	331.5	331.5	332.1	336.6
62.5°	299.1	299.6	300.8	301.4
65°	267.8	269.5	268.9	268.4
67.5°	237.1	237.1	237.7	236.5
70°	205.3	205.3	205.3	208.1
72.5°	172.3	172.3	172.9	174.0
75°	141.6	141.6	141.6	139.9
77.5°	108.0	108.6	108.6	109.2
80°	78.5	77.9	77.9	77.3
82.5°	49.5	50.0	49.5	48.9
85°	27.3	27.9	26.2	26.2
87.5°	9.7	9.7	9.1	10.2
90°	0.0	0.0	0.0	0.0

(END OF REPORT)