

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: P243005

Luminaire Tested: **S121DR-H880D940-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P243005  
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-H880D940-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: 3091.1 lumens  
Efficiency: N/A  
Efficacy: 98.1 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

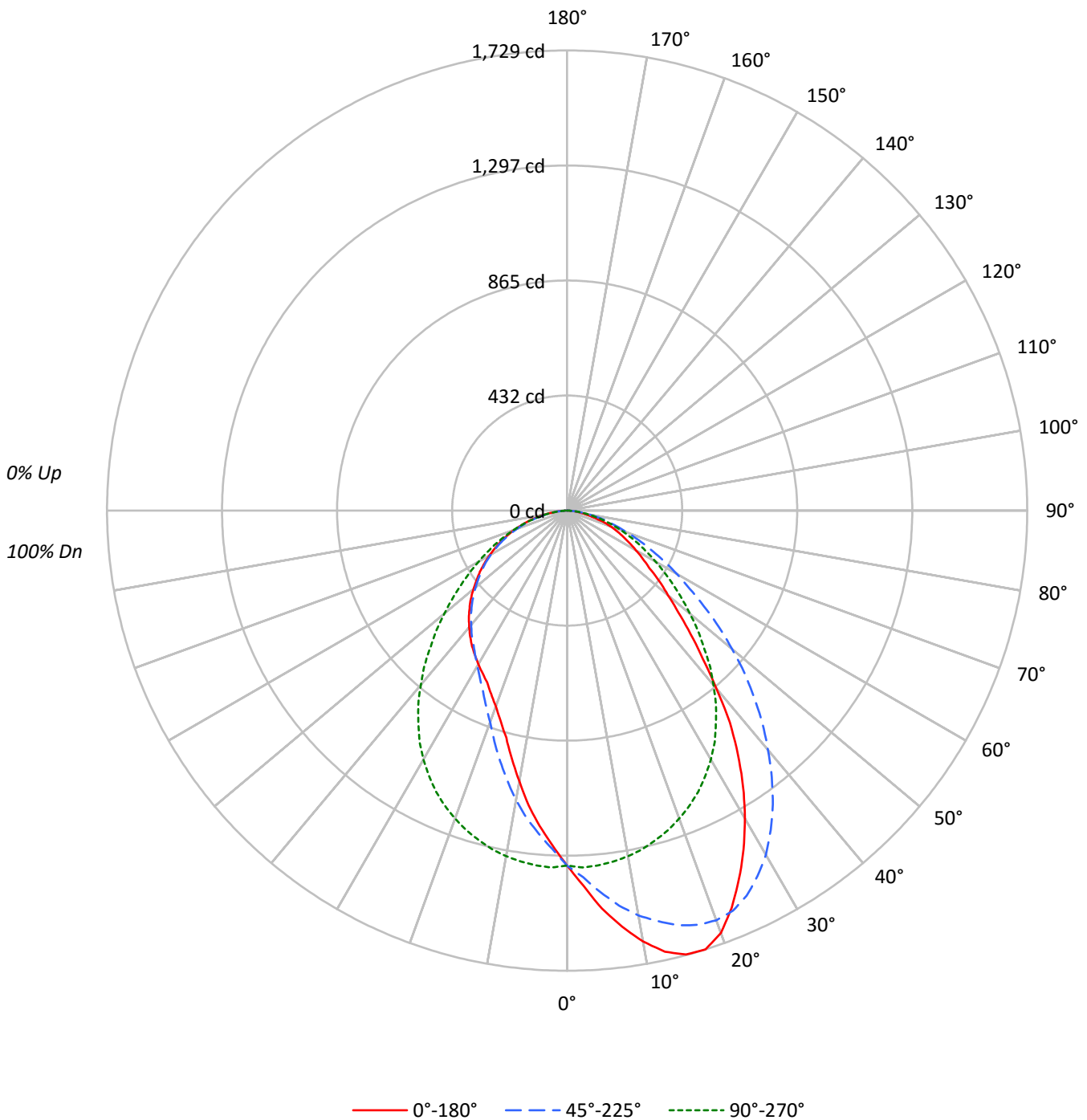
Input Watts (W): 31.5  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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	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°	39517	39517	39517
5°	44650	39796	35355
10°	49463	39672	31080
15°	52966	39328	27107
20°	53259	38818	24683
25°	49955	38090	23274
30°	45702	36940	22814
35°	40472	35249	22527
40°	33724	33059	22136
45°	27492	30417	21731
50°	22817	27717	21186
55°	19527	25126	20637
60°	17689	22750	19982
65°	16336	20703	19273
70°	15074	18652	18141
75°	12169	16531	16714
80°	9709	13377	14299
85°	7309	9859	11695



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	127.4	4.1
10°-20°	365.0	11.8
20°-30°	531.5	17.2
30°-40°	592.5	19.2
40°-50°	547.8	17.7
50°-60°	436.4	14.1
60°-70°	298.7	9.7
70°-80°	155.1	5.0
80°-90°	36.7	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°	1023.9	33.1
0°-40°	1616.4	52.3
0°-60°	2600.6	84.1
0°-90°	3091.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3091.1	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1334	1334	1334	1334	1334	
5°	1501	1439	1338	1219	1189	147
15°	1727	1613	1282	973	884	484
25°	1528	1596	1165	749	712	700
35°	1119	1348	974	613	623	694
45°	656	993	726	507	519	511
55°	378	627	486	390	400	346
65°	233	346	295	267	275	232
75°	106	156	144	136	146	117
85°	22	30	29	31	34	26
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°	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7
2.5°	1411.0	1411.0	1407.2	1408.8	1406.7	1402.9	1397.0	1390.6	1382.5	1379.3	1377.7
5°	1501.2	1503.3	1500.6	1495.3	1494.2	1489.9	1477.0	1469.5	1452.3	1438.9	1434.6
7.5°	1576.3	1580.1	1580.1	1570.4	1566.1	1555.4	1546.3	1533.9	1512.4	1497.4	1485.1
10°	1644.0	1645.6	1639.7	1634.3	1625.7	1617.1	1601.6	1586.0	1562.9	1544.7	1524.3
12.5°	1697.7	1700.9	1696.6	1688.0	1677.8	1666.5	1647.2	1627.3	1604.8	1580.1	1558.1
15°	1726.7	1731.5	1732.0	1725.1	1717.5	1704.1	1690.2	1668.7	1644.0	1613.4	1577.4
17.5°	1728.8	1731.0	1732.6	1727.2	1722.4	1717.5	1703.6	1685.9	1662.2	1632.2	1598.9
20°	1689.1	1693.9	1699.3	1694.5	1696.6	1696.6	1690.7	1681.6	1662.2	1638.1	1605.9
22.5°	1615.0	1626.3	1633.2	1638.1	1642.9	1649.9	1656.9	1652.6	1645.1	1627.3	1598.3
25°	1528.0	1537.1	1550.6	1554.9	1558.6	1579.0	1591.4	1600.0	1600.0	1596.2	1576.9
27.5°	1435.7	1441.6	1452.8	1467.9	1481.8	1494.2	1520.0	1536.1	1549.0	1549.0	1538.8
30°	1335.8	1344.4	1357.8	1368.0	1385.2	1410.4	1431.9	1451.2	1480.8	1493.7	1491.5
32.5°	1230.6	1239.2	1253.1	1261.7	1286.4	1306.8	1340.1	1370.2	1404.0	1423.3	1435.1
35°	1118.9	1119.4	1143.1	1157.0	1178.5	1203.7	1244.5	1278.4	1315.4	1347.6	1372.9
37.5°	1004.0	1003.5	1020.1	1044.8	1062.0	1097.4	1139.3	1176.9	1228.4	1262.8	1302.5
40°	871.9	883.2	897.2	919.7	949.2	991.1	1030.8	1079.7	1131.2	1174.2	1216.6
42.5°	753.8	762.9	785.5	810.7	842.4	877.8	926.2	980.4	1030.8	1086.7	1133.9
45°	656.1	660.9	674.3	694.7	728.0	768.3	818.8	876.2	935.8	992.7	1045.3
47.5°	565.9	580.4	587.4	606.2	630.3	667.9	720.5	772.1	840.8	904.1	961.6
50°	495.0	497.7	510.1	524.0	552.5	580.4	620.1	673.3	737.2	808.6	867.1
52.5°	437.0	436.0	446.2	458.5	478.4	507.9	542.3	593.8	648.0	718.9	782.8
55°	378.0	383.3	388.2	400.5	418.2	440.8	469.8	513.3	564.3	627.1	694.2
57.5°	337.2	337.7	340.4	350.6	362.4	380.1	408.0	445.1	490.7	545.5	610.5
60°	298.5	299.1	303.9	307.1	315.2	330.2	351.7	382.3	422.5	475.2	532.1
62.5°	265.2	265.8	268.4	271.7	279.2	285.1	303.3	329.7	362.4	409.1	458.0
65°	233.0	233.6	233.6	237.8	242.7	248.0	260.9	277.6	309.3	346.3	389.8
67.5°	201.9	205.1	204.0	207.2	211.5	214.2	223.3	238.4	259.9	291.0	328.6
70°	174.0	173.4	175.0	176.6	178.3	182.5	188.5	198.7	216.9	238.9	272.2
72.5°	143.9	140.7	142.8	145.0	147.6	150.9	155.7	163.2	177.2	194.9	219.6
75°	106.3	104.7	107.9	108.5	113.3	117.6	122.9	130.5	140.7	155.7	171.8
77.5°	77.3	79.5	80.5	81.6	82.1	87.0	92.9	99.3	105.2	119.2	131.5
80°	56.9	56.9	57.4	58.5	59.6	60.7	64.4	68.7	73.6	82.1	94.5
82.5°	39.7	39.2	39.2	39.7	40.3	41.3	43.0	44.6	48.9	53.2	59.6
85°	21.5	22.0	22.5	21.5	22.0	22.5	23.6	25.2	26.3	29.5	32.2
87.5°	7.5	9.1	8.6	8.6	9.1	9.1	9.1	10.2	10.2	10.2	11.8
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°	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7
2.5°	1376.1	1374.5	1370.2	1361.6	1355.7	1344.9	1342.8	1342.2	1332.6	1318.1	1317.0
5°	1427.1	1414.7	1404.5	1389.5	1374.5	1356.2	1345.5	1338.0	1320.8	1299.3	1289.6
7.5°	1473.8	1456.1	1435.1	1411.5	1389.5	1363.7	1344.9	1329.9	1304.7	1277.3	1260.6
10°	1511.4	1489.4	1463.0	1431.4	1401.3	1367.5	1341.2	1318.6	1285.3	1251.5	1229.0
12.5°	1537.1	1512.4	1482.4	1445.3	1408.8	1370.2	1332.0	1303.6	1261.7	1222.5	1193.5
15°	1566.1	1525.3	1494.2	1452.3	1409.4	1363.2	1322.9	1282.1	1233.8	1189.8	1152.2
17.5°	1573.1	1535.5	1498.5	1452.3	1407.7	1351.4	1304.7	1259.6	1205.9	1151.6	1115.1
20°	1579.6	1536.6	1491.0	1441.0	1394.3	1336.3	1283.7	1231.1	1168.8	1110.3	1064.7
22.5°	1574.7	1532.8	1481.8	1425.5	1375.0	1315.4	1258.5	1200.5	1130.7	1069.5	1018.0
25°	1560.8	1522.1	1469.5	1407.7	1347.1	1286.4	1226.8	1165.1	1089.4	1018.5	961.6
27.5°	1532.3	1497.9	1447.5	1382.0	1318.1	1251.0	1188.7	1124.3	1043.2	970.7	910.0
30°	1494.2	1466.8	1415.8	1350.3	1281.0	1209.1	1145.2	1079.7	995.4	916.5	852.1
32.5°	1441.6	1422.2	1378.2	1314.3	1239.7	1163.5	1098.0	1031.4	941.2	866.0	800.5
35°	1382.5	1373.4	1334.2	1270.3	1193.0	1113.0	1042.7	974.5	891.3	811.8	749.0
37.5°	1313.3	1319.7	1284.3	1220.9	1140.9	1059.3	985.2	919.2	834.9	758.6	696.9
40°	1244.5	1254.2	1227.4	1168.3	1085.1	1000.8	925.6	854.7	776.4	709.2	648.0
42.5°	1168.3	1187.6	1166.7	1109.2	1028.2	939.0	860.6	794.6	720.0	658.2	604.5
45°	1087.2	1111.9	1103.3	1044.8	964.8	877.3	794.6	725.9	665.8	611.0	562.1
47.5°	1005.1	1033.5	1029.8	980.9	904.1	814.5	732.9	665.2	609.9	565.9	525.1
50°	920.8	949.8	950.3	906.8	835.4	750.0	662.5	601.3	557.3	518.6	485.4
52.5°	838.6	867.6	868.2	834.3	762.9	679.7	599.2	543.3	505.8	475.7	447.8
55°	752.7	786.6	789.8	757.0	693.7	613.7	539.6	486.4	453.1	433.8	409.7
57.5°	665.8	702.3	708.7	682.4	621.2	546.6	484.3	433.3	406.4	393.0	374.8
60°	584.7	620.7	630.9	600.8	550.3	486.4	426.8	383.9	362.4	351.7	338.8
62.5°	510.1	546.0	551.4	525.6	475.7	422.0	376.9	337.7	320.0	311.9	301.7
65°	437.0	469.2	476.2	453.1	408.0	363.5	323.8	295.3	279.7	272.7	266.3
67.5°	369.9	400.0	404.8	383.9	346.3	308.2	279.2	254.5	243.8	234.6	231.9
70°	306.6	334.0	338.2	317.3	287.8	256.6	232.5	215.3	205.1	199.7	196.0
72.5°	248.0	269.5	273.3	260.4	237.3	209.9	191.1	176.6	170.2	165.4	163.8
75°	193.8	214.8	215.3	204.0	185.2	166.4	151.9	144.4	136.9	132.1	131.0
77.5°	148.7	160.5	162.1	156.2	138.0	126.2	114.9	109.5	106.8	102.0	102.0
80°	106.3	113.3	116.0	107.4	98.8	88.6	82.7	78.4	76.2	73.0	73.0
82.5°	66.0	71.9	75.2	68.7	64.4	59.1	54.8	52.1	50.5	48.9	48.3
85°	36.0	40.3	40.3	38.1	34.4	31.7	30.1	29.0	28.5	27.9	27.4
87.5°	12.9	16.1	14.5	15.0	13.4	12.9	12.3	12.3	12.9	11.8	11.8
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°	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7	1333.7
2.5°	1310.0	1307.3	1299.3	1291.8	1285.9	1273.0	1270.3	1271.4	1271.4	1271.9	1266.0
5°	1278.4	1267.1	1254.2	1242.4	1233.3	1218.8	1210.7	1208.6	1206.9	1203.7	1197.8
7.5°	1242.4	1229.5	1211.2	1200.5	1181.2	1165.1	1153.8	1146.3	1141.4	1134.5	1124.8
10°	1205.9	1187.1	1166.7	1145.2	1125.9	1104.4	1086.7	1078.1	1067.9	1060.9	1050.2
12.5°	1169.4	1143.1	1115.1	1090.4	1064.1	1038.9	1020.6	1008.8	990.6	980.4	969.1
15°	1121.6	1089.4	1065.7	1022.8	1009.9	973.4	951.4	942.3	924.5	921.3	903.6
17.5°	1076.5	1039.4	1004.5	968.6	934.2	909.0	890.2	878.4	864.4	855.8	844.0
20°	1020.1	981.5	939.6	902.0	873.0	846.2	834.3	819.3	811.3	802.7	794.1
22.5°	966.4	919.2	877.3	846.7	817.2	795.1	782.3	772.1	765.1	756.5	750.6
25°	909.0	864.9	826.3	794.6	766.2	749.0	738.2	732.3	728.0	721.6	717.8
27.5°	854.2	809.6	771.5	747.4	724.3	709.2	703.9	698.5	693.1	691.0	690.5
30°	795.7	754.9	723.7	702.8	681.9	673.8	671.1	665.8	666.8	667.4	665.8
32.5°	746.3	706.6	682.9	665.2	649.1	643.2	642.7	640.5	641.1	643.7	642.7
35°	695.3	665.8	642.1	627.6	617.4	613.1	613.7	614.2	617.4	618.0	620.1
37.5°	651.8	623.3	607.8	593.8	589.0	589.0	589.5	590.1	592.7	596.0	597.0
40°	608.8	585.8	572.3	563.2	560.5	560.5	562.7	565.4	567.0	570.2	570.7
42.5°	570.2	550.9	540.7	531.5	532.6	535.3	535.8	537.4	541.7	542.3	543.3
45°	532.1	517.6	507.4	504.7	504.7	506.8	509.5	510.6	513.8	514.3	515.4
47.5°	499.3	484.3	476.8	474.1	475.7	478.4	482.1	483.7	486.4	485.9	488.6
50°	462.8	450.5	444.6	443.5	444.6	449.4	451.0	454.8	457.4	459.0	460.1
52.5°	427.9	418.2	415.6	415.0	417.2	420.4	422.5	426.3	429.5	429.5	429.0
55°	394.6	386.0	382.8	385.5	388.2	389.8	394.1	396.2	399.5	400.0	399.5
57.5°	360.8	353.3	352.2	353.3	358.6	361.9	364.6	364.6	366.2	366.7	368.3
60°	325.9	321.1	320.0	322.7	328.6	330.7	332.3	332.9	335.0	334.0	337.2
62.5°	293.1	288.3	290.5	293.1	295.3	298.5	299.6	302.3	301.7	302.8	304.4
65°	259.3	256.6	257.2	260.4	263.1	267.4	267.4	267.4	270.1	270.1	271.1
67.5°	226.6	225.0	227.1	229.8	230.3	233.0	232.5	235.7	237.8	238.9	240.0
70°	194.9	193.8	193.8	196.5	199.2	200.3	201.3	203.5	204.0	205.6	208.3
72.5°	164.8	161.6	162.1	165.9	165.9	168.0	170.7	170.7	174.0	174.5	177.2
75°	132.1	131.0	132.1	134.2	136.9	136.4	139.6	139.1	140.1	143.9	144.4
77.5°	103.1	101.5	104.2	105.2	105.8	106.3	107.4	110.1	112.2	113.8	114.4
80°	74.1	73.6	76.2	77.3	76.8	77.9	79.5	82.1	82.1	83.2	84.8
82.5°	49.9	48.9	50.5	52.1	53.2	53.7	53.7	54.8	55.3	56.4	56.4
85°	28.5	28.5	29.5	30.1	31.1	30.6	31.7	31.1	32.2	33.3	32.8
87.5°	12.3	12.3	12.3	12.3	12.9	12.9	13.4	13.4	12.9	13.4	12.3
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: P243005

CATALOG NUMBER: S121DR-H880D940-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1333.7	1333.7	1333.7	1333.7
2.5°	1263.9	1264.9	1262.2	1259.6
5°	1197.3	1193.5	1189.8	1188.7
7.5°	1122.7	1122.7	1113.5	1115.7
10°	1042.7	1039.4	1032.5	1033.0
12.5°	964.8	962.1	958.4	956.8
15°	894.5	896.1	898.8	883.7
17.5°	839.2	834.9	832.7	830.0
20°	789.8	787.6	783.3	782.8
22.5°	751.7	746.8	745.8	746.3
25°	715.1	715.1	715.1	711.9
27.5°	689.4	689.4	687.8	688.3
30°	666.8	667.9	666.3	666.8
32.5°	645.4	645.9	644.8	644.3
35°	621.2	622.8	622.3	622.8
37.5°	598.1	599.2	598.1	598.1
40°	571.8	574.5	573.9	572.3
42.5°	545.5	545.5	547.1	546.6
45°	518.1	517.0	517.0	518.6
47.5°	489.1	491.3	490.2	490.7
50°	462.3	461.7	460.1	459.6
52.5°	430.6	431.7	431.1	428.4
55°	400.0	400.0	399.5	399.5
57.5°	367.2	368.8	368.3	368.3
60°	336.1	337.2	337.7	337.2
62.5°	304.4	305.0	304.4	305.0
65°	273.8	273.8	273.3	274.9
67.5°	240.5	241.1	240.5	241.6
70°	208.9	209.9	210.5	209.4
72.5°	178.8	177.7	178.3	177.2
75°	145.5	146.0	145.5	146.0
77.5°	114.4	114.9	114.4	114.9
80°	84.3	84.3	84.8	83.8
82.5°	56.9	56.9	58.5	56.9
85°	33.3	33.3	32.2	34.4
87.5°	12.9	12.9	12.9	12.9
90°	0.0	0.0	0.0	0.0

(END OF REPORT)