

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: P333949

Luminaire Tested: **S123DS-S1165D940-4F0-1E-UDD-A**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P333949
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-20)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123DS-S1165D940-4F0-1E-UDD-A
Description: DEFINE 3 DIRECT LED LUMINAIRE, ASYMMETRIC DIFFUSER
PENDANT/SURFACE/WALL MOUNT, 1165 LUMENS PER FOOT
Light Source: 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4116.4 lumens
Efficiency: N/A
Efficacy: 100.2 lumens/watt
Spacing Criteria (0/90/45): 1.37 / 1.23 / 1.5
Luminous Opening: Rectangular (W 4' x L: 0.5' x H: 0')
CIE Type: Direct

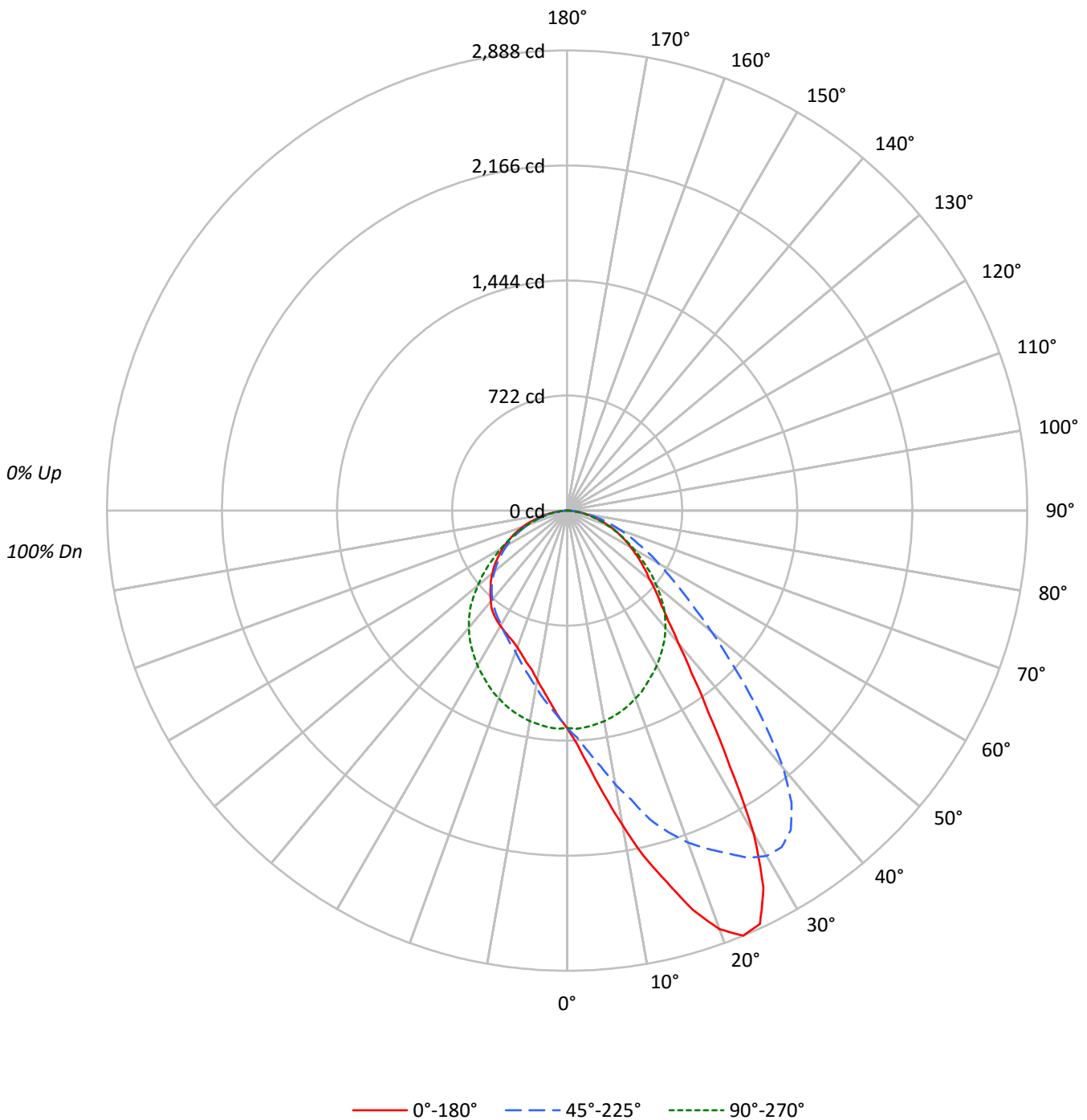
Input Watts (W): 41.1
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	101	98	107	103	99	96	99	96	93	95	92	90	91	89	87	85					85			
2	100	93	86	81	98	91	85	80	87	82	78	84	80	76	81	78	74	72					72			
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	64	62					62			
4	84	73	65	58	82	72	64	58	69	62	57	67	61	56	65	60	56	53					53			
5	78	66	57	51	76	64	56	50	62	55	50	60	54	49	59	53	49	47					47			
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	48	43	41					41			
7	67	54	45	39	65	53	45	39	52	44	39	50	44	39	49	43	38	36					36			
8	62	49	41	35	61	49	41	35	47	40	35	46	39	35	45	39	35	33					33			
9	58	45	37	32	57	45	37	32	43	36	32	42	36	31	41	36	31	29					29			
10	55	42	34	29	53	41	34	29	40	33	29	39	33	29	38	33	28	27					27			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	7340	7340	7340
5°	8753	7372	6533
10°	10956	7334	5901
15°	13438	7275	5493
20°	16008	7183	5230
25°	16998	7071	5172
30°	14569	6989	5198
35°	10132	6872	5253
40°	7632	6736	5236
45°	6337	6533	5170
50°	5676	6119	5123
55°	5307	5673	5059
60°	4978	5207	5007
65°	4679	4746	4847
70°	4387	4222	4617
75°	3930	3695	4232
80°	3440	3031	3645
85°	2692	2205	2445



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	134.1	3.3
10°-20°	430.8	10.5
20°-30°	724.9	17.6
30°-40°	819.2	19.9
40°-50°	733.8	17.8
50°-60°	592.3	14.4
60°-70°	412.7	10.0
70°-80°	216.6	5.3
80°-90°	51.9	1.3
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°	1289.8	31.3
0°-40°	2109.1	51.2
0°-60°	3435.2	83.5
0°-90°	4116.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4116.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1364	1364	1364	1364	1364	
5°	1620	1518	1364	1236	1209	167
15°	2412	2007	1306	1030	986	696
25°	2862	2372	1191	885	871	1265
35°	1542	2446	1046	782	800	995
45°	833	1612	858	669	679	657
55°	566	876	605	517	539	508
65°	367	491	373	351	381	366
75°	189	233	178	176	204	202
85°	44	50	36	35	40	53
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°	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8
2.5°	1468.2	1466.9	1463.6	1466.2	1461.0	1453.7	1453.0	1446.4	1427.3	1425.9	1420.6
5°	1620.2	1614.9	1614.2	1613.6	1604.3	1591.8	1568.0	1566.0	1534.3	1518.4	1499.3
7.5°	1803.9	1801.9	1796.6	1790.7	1759.6	1744.4	1722.0	1692.9	1655.9	1620.2	1597.7
10°	2004.8	2026.6	1999.5	1981.0	1963.8	1931.4	1893.8	1846.8	1799.9	1745.1	1703.5
12.5°	2220.2	2228.1	2228.1	2210.9	2181.8	2128.3	2054.3	2001.5	1959.2	1858.7	1823.1
15°	2411.8	2452.1	2426.3	2366.9	2368.2	2321.3	2234.0	2138.2	2087.4	2007.4	1898.4
17.5°	2628.5	2635.8	2627.9	2572.4	2545.3	2477.2	2398.6	2309.4	2213.6	2116.4	2003.4
20°	2795.0	2791.1	2767.9	2742.2	2685.4	2635.1	2547.3	2444.8	2312.7	2217.5	2091.3
22.5°	2887.5	2880.3	2872.3	2851.9	2806.9	2752.1	2675.4	2561.1	2436.9	2296.8	2146.2
25°	2862.4	2871.0	2872.3	2866.4	2849.9	2817.5	2755.4	2666.2	2540.6	2372.1	2220.2
27.5°	2668.2	2690.0	2717.7	2736.2	2766.0	2785.8	2766.0	2709.8	2606.7	2456.1	2269.1
30°	2344.4	2318.0	2383.4	2466.0	2522.1	2621.3	2676.8	2680.1	2627.9	2503.0	2321.9
32.5°	1895.1	1938.0	1957.8	2064.2	2203.7	2318.0	2442.2	2552.5	2578.3	2505.6	2353.0
35°	1542.2	1578.6	1631.4	1684.3	1816.4	1930.1	2124.4	2293.5	2428.3	2446.2	2349.0
37.5°	1281.9	1303.0	1335.4	1391.6	1482.1	1622.8	1776.8	1996.8	2182.5	2313.3	2300.1
40°	1086.3	1091.6	1129.2	1169.6	1239.6	1350.6	1486.1	1675.0	1909.0	2111.8	2196.4
42.5°	939.6	952.8	963.4	1001.7	1053.9	1130.6	1254.1	1402.1	1611.6	1852.8	2038.5
45°	832.6	845.8	855.7	881.5	921.1	977.3	1065.2	1207.9	1371.1	1612.3	1834.9
47.5°	758.6	757.2	765.8	786.3	814.7	859.7	924.4	1019.6	1176.2	1377.7	1610.9
50°	677.9	688.5	691.2	706.4	727.5	758.6	810.1	888.1	1011.0	1182.8	1392.9
52.5°	621.1	622.4	631.0	640.9	658.8	681.2	724.2	781.0	870.9	1011.0	1199.9
55°	565.6	565.6	572.9	581.5	592.0	613.9	643.6	688.5	761.9	875.5	1035.4
57.5°	514.1	516.7	523.3	525.3	534.6	549.8	575.5	611.2	667.4	759.2	891.4
60°	462.5	468.5	467.8	473.1	481.0	492.3	513.4	541.2	590.1	660.1	767.1
62.5°	417.6	415.6	415.6	422.2	430.2	440.7	452.6	475.8	515.4	575.5	662.7
65°	367.4	366.1	370.7	374.7	377.3	385.2	395.8	416.9	444.7	490.9	561.7
67.5°	323.8	319.8	323.1	324.4	329.1	335.7	346.2	359.5	381.9	420.9	477.7
70°	278.8	275.5	274.9	276.2	280.2	284.8	292.1	304.6	325.1	354.8	393.8
72.5°	232.6	230.6	230.6	233.9	235.2	237.9	242.5	253.7	268.9	289.4	325.1
75°	189.0	189.0	189.0	189.6	191.6	194.3	198.2	204.2	216.7	232.6	257.0
77.5°	149.3	150.0	148.7	148.0	151.3	152.6	153.3	159.9	167.2	179.1	198.2
80°	111.0	107.7	109.0	111.0	112.3	113.0	115.0	116.3	122.2	128.2	140.7
82.5°	75.3	72.7	72.7	76.0	76.0	76.6	78.6	80.6	81.9	87.2	92.5
85°	43.6	43.6	44.3	44.3	44.9	44.3	46.3	46.9	46.9	50.2	54.2
87.5°	19.8	18.5	19.2	19.8	19.2	19.8	20.5	21.1	21.8	22.5	23.1
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°	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8
2.5°	1416.7	1411.4	1406.1	1396.9	1388.9	1377.7	1374.4	1370.4	1358.5	1348.0	1340.0
5°	1492.0	1476.1	1453.0	1431.9	1414.7	1391.6	1378.4	1364.5	1344.7	1326.8	1312.3
7.5°	1564.0	1536.3	1503.9	1468.9	1435.2	1402.8	1377.0	1353.9	1328.1	1303.0	1283.9
10°	1653.2	1608.3	1558.1	1503.9	1457.6	1412.7	1375.1	1342.0	1306.3	1275.3	1249.5
12.5°	1755.0	1683.0	1609.0	1540.2	1483.4	1416.7	1369.1	1324.8	1283.2	1244.2	1214.5
15°	1831.0	1746.4	1664.5	1573.9	1490.7	1412.7	1358.5	1305.7	1258.8	1220.4	1183.4
17.5°	1906.3	1813.8	1709.4	1600.4	1502.6	1412.7	1338.7	1281.9	1224.4	1178.1	1142.5
20°	1968.4	1859.4	1737.2	1622.8	1511.8	1408.8	1325.5	1254.1	1190.7	1141.1	1099.5
22.5°	2021.9	1889.8	1762.3	1638.0	1511.2	1398.2	1301.0	1227.0	1157.0	1108.8	1063.8
25°	2055.6	1903.0	1776.1	1632.8	1494.7	1379.7	1274.0	1190.7	1122.0	1065.2	1019.6
27.5°	2087.4	1901.0	1757.6	1603.0	1474.8	1360.5	1246.9	1157.7	1085.6	1024.2	977.3
30°	2119.1	1904.3	1725.3	1572.6	1443.1	1324.2	1214.5	1124.6	1048.0	985.2	941.6
32.5°	2138.9	1902.3	1695.5	1530.3	1392.9	1291.1	1179.5	1085.6	1006.3	944.9	903.3
35°	2144.2	1891.1	1660.5	1468.9	1338.0	1235.6	1142.5	1046.0	963.4	905.9	858.3
37.5°	2133.0	1870.6	1622.2	1413.4	1272.0	1170.2	1088.9	1006.3	927.1	863.0	821.3
40°	2096.6	1850.8	1575.9	1353.9	1203.3	1106.1	1039.4	958.8	880.8	820.7	782.3
42.5°	2027.2	1810.5	1525.0	1287.8	1131.9	1034.8	974.6	910.5	837.9	782.3	744.0
45°	1905.6	1748.4	1474.2	1221.8	1061.8	961.4	907.2	858.3	791.6	736.8	703.7
47.5°	1750.4	1664.5	1400.8	1152.4	988.5	891.4	834.5	794.2	742.0	697.8	665.4
50°	1587.2	1556.1	1326.2	1081.0	915.2	820.7	766.5	730.8	695.8	651.5	622.4
52.5°	1398.8	1430.6	1238.9	1007.0	840.5	748.0	697.8	671.3	640.3	605.9	581.5
55°	1224.4	1293.8	1135.9	922.4	766.5	677.9	629.7	604.6	586.1	559.0	537.2
57.5°	1055.2	1143.8	1028.8	837.2	693.8	616.5	568.9	540.5	528.6	513.4	495.6
60°	907.9	995.1	912.5	751.3	620.5	547.8	506.8	483.7	471.8	461.9	447.3
62.5°	776.4	864.9	798.9	664.1	548.4	482.4	448.0	425.5	416.9	413.0	401.1
65°	658.1	734.1	687.9	572.9	480.4	420.9	388.5	372.7	364.1	362.1	354.2
67.5°	555.7	614.5	578.8	492.3	416.9	362.8	334.3	320.5	313.2	312.5	305.9
70°	455.3	509.5	483.7	407.0	344.3	304.0	280.2	268.3	264.3	263.6	260.3
72.5°	377.3	411.0	391.8	331.0	286.1	250.4	234.6	222.0	217.4	218.7	216.7
75°	290.7	319.1	307.3	263.0	224.0	200.2	185.7	177.7	173.8	175.8	173.1
77.5°	222.0	241.8	229.9	196.2	171.1	153.3	142.1	136.8	132.8	132.8	131.5
80°	157.9	168.5	162.5	144.0	124.2	109.7	101.1	97.8	95.8	95.2	94.5
82.5°	101.1	109.7	102.4	91.2	79.3	72.0	68.1	63.4	62.1	62.8	62.1
85°	56.8	60.1	57.5	49.6	44.3	40.3	37.7	35.7	34.4	35.0	33.7
87.5°	24.4	25.1	23.1	20.5	19.2	17.2	17.2	15.9	14.5	14.5	13.9
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°	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8	1363.8
2.5°	1335.4	1330.8	1324.2	1314.3	1306.3	1293.8	1293.8	1295.8	1295.8	1295.1	1293.8
5°	1300.4	1290.5	1278.6	1264.7	1250.2	1235.6	1233.0	1227.7	1223.7	1221.1	1217.8
7.5°	1264.7	1248.2	1231.7	1212.5	1196.0	1182.1	1172.2	1163.6	1158.3	1152.4	1147.7
10°	1228.4	1206.6	1186.1	1165.6	1143.1	1125.3	1114.1	1106.1	1100.2	1094.9	1092.2
12.5°	1185.4	1159.6	1136.5	1117.4	1092.2	1073.7	1063.2	1060.5	1053.3	1040.7	1034.1
15°	1143.8	1120.7	1093.6	1063.8	1051.9	1029.5	1016.9	1011.0	1007.0	998.4	995.8
17.5°	1109.4	1078.4	1047.3	1025.5	1003.7	985.9	978.6	970.7	965.4	957.4	955.5
20°	1066.5	1039.4	1011.6	987.8	964.7	944.9	938.9	933.7	928.4	925.1	922.4
22.5°	1022.9	995.8	974.0	952.2	927.1	915.8	909.2	903.3	900.0	898.0	895.3
25°	982.6	958.8	933.0	913.2	893.4	884.8	880.8	877.5	874.9	871.5	870.9
27.5°	946.9	920.4	898.6	879.5	864.9	857.7	853.0	851.1	851.1	852.4	853.0
30°	905.9	882.1	864.9	849.1	835.9	829.3	828.6	828.6	831.2	831.9	833.2
32.5°	868.2	849.7	832.6	817.4	808.1	804.2	807.5	807.5	809.4	811.4	814.1
35°	831.9	814.7	801.5	788.3	779.7	781.7	783.0	784.3	787.6	791.6	794.2
37.5°	797.5	781.7	767.8	757.2	752.0	755.9	759.2	761.9	765.8	769.1	771.8
40°	759.9	748.6	735.4	726.2	727.5	729.5	732.1	735.4	738.7	740.7	743.4
42.5°	724.9	713.0	703.7	696.4	698.4	701.1	702.4	703.7	707.7	711.6	713.0
45°	689.2	679.9	670.7	666.1	667.4	668.7	670.0	672.0	675.3	677.9	678.6
47.5°	648.9	642.3	636.3	631.0	633.7	633.0	635.0	639.0	640.3	641.6	645.6
50°	610.5	604.6	597.3	596.0	596.0	596.0	596.7	602.0	602.0	604.6	607.2
52.5°	568.3	565.0	561.0	558.3	557.0	557.0	560.3	562.3	563.6	567.6	570.2
55°	526.6	522.7	518.7	516.7	515.4	516.7	522.0	523.3	526.6	528.6	530.6
57.5°	483.0	480.4	477.1	475.8	475.8	476.4	480.4	483.7	484.3	490.9	493.6
60°	440.1	435.4	432.8	432.8	431.5	437.4	436.1	442.7	444.0	448.0	452.6
62.5°	395.8	389.2	388.5	388.5	391.2	391.8	394.5	396.5	400.4	405.7	409.0
65°	347.6	344.3	348.9	348.2	346.9	350.9	350.9	354.2	358.1	362.8	370.0
67.5°	302.6	300.0	301.3	300.6	302.6	305.3	307.3	309.9	314.5	319.8	324.4
70°	257.0	259.0	255.7	258.4	260.3	261.0	262.3	266.3	271.6	274.9	280.2
72.5°	212.8	212.1	213.4	214.1	216.1	217.4	218.7	223.3	229.3	231.9	235.9
75°	170.5	169.8	171.8	171.8	175.1	176.4	177.7	179.7	185.0	189.0	192.3
77.5°	132.2	132.8	132.2	134.8	133.5	134.1	138.1	140.1	140.7	149.3	150.7
80°	93.8	95.2	95.8	96.5	97.1	95.8	100.4	102.4	102.4	107.0	110.3
82.5°	60.8	61.5	63.4	64.1	64.1	66.1	65.4	66.7	68.7	70.0	74.7
85°	33.7	35.7	36.3	35.7	36.3	35.0	37.0	37.7	38.3	38.3	38.3
87.5°	13.2	13.9	13.2	13.9	13.2	13.9	13.9	12.6	12.6	14.5	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



TEST NUMBER: P333949

CATALOG NUMBER: S123DS-S1165D940-4F0-1E-UDD-A

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1363.8	1363.8	1363.8	1363.8
2.5°	1289.2	1288.5	1293.1	1289.8
5°	1213.8	1215.8	1209.2	1209.2
7.5°	1145.8	1143.1	1143.8	1139.2
10°	1084.3	1080.4	1079.0	1079.7
12.5°	1033.4	1033.4	1022.9	1022.9
15°	995.8	983.2	981.9	985.9
17.5°	954.1	946.9	947.5	946.2
20°	922.4	918.5	917.8	913.2
22.5°	893.4	892.7	893.4	888.1
25°	870.2	873.5	870.9	870.9
27.5°	854.4	854.4	852.4	852.4
30°	835.9	835.2	836.5	836.5
32.5°	817.4	818.7	818.7	819.3
35°	798.2	798.9	800.8	799.5
37.5°	773.1	776.4	775.7	777.1
40°	744.0	746.0	745.3	745.3
42.5°	714.3	715.6	713.6	712.3
45°	681.2	679.9	681.9	679.3
47.5°	644.9	645.6	646.2	648.9
50°	608.6	612.5	612.5	611.9
52.5°	572.9	574.2	577.5	577.5
55°	535.9	537.2	538.5	539.2
57.5°	498.2	497.6	500.2	500.9
60°	457.9	457.9	463.2	465.2
62.5°	415.0	417.6	422.9	418.9
65°	373.3	378.6	378.0	380.6
67.5°	329.7	333.0	338.3	338.3
70°	285.5	288.8	291.4	293.4
72.5°	242.5	243.8	251.1	247.1
75°	196.9	201.5	205.5	203.5
77.5°	153.3	159.2	160.6	158.6
80°	115.0	114.3	118.3	117.6
82.5°	76.6	76.0	77.3	78.0
85°	41.0	42.9	40.3	39.6
87.5°	11.9	11.9	11.2	10.6
90°	0.0	0.0	0.0	0.0

(END OF REPORT)