

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: P243491

Luminaire Tested: **S124DR-H1020D927-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243491
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-60)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S124DR-H1020D927-X4F0-XX-UDD-A-W
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 2700K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3350.5 lumens
Efficiency: N/A
Efficacy: 106.4 lumens/watt
Spacing Criteria (0/90/45): 1.35 / 1.22 / 1.45
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')
CIE Type: Direct

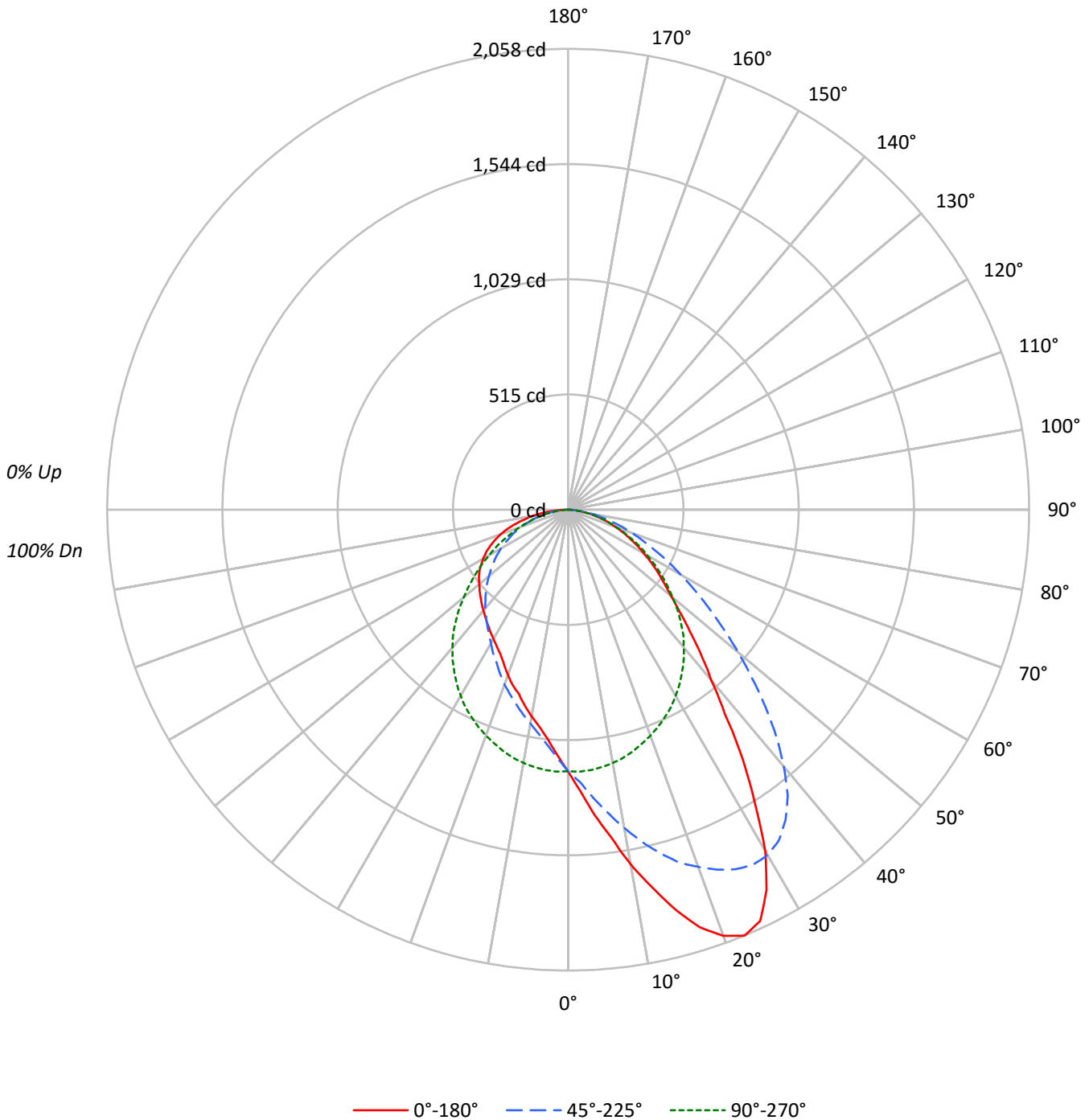
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	101	97	107	103	99	96	98	95	93	94	92	90	91	89	87	85
2	100	92	86	80	97	90	84	79	87	82	77	83	79	76	80	77	74	72
3	92	81	74	67	89	80	73	67	77	71	66	74	69	64	72	67	63	61
4	84	73	64	58	82	71	63	57	69	62	56	66	60	56	64	59	55	53
5	78	65	56	50	75	64	56	50	62	55	49	60	54	49	58	53	48	46
6	72	59	50	44	70	58	50	44	56	49	43	54	48	43	53	47	43	41
7	67	53	45	39	65	53	45	39	51	44	38	50	43	38	48	42	38	36
8	62	49	41	35	61	48	40	35	47	40	35	46	39	34	44	39	34	32
9	58	45	37	31	57	44	37	31	43	36	31	42	36	31	41	35	31	29
10	54	41	34	29	53	41	34	28	40	33	28	39	33	28	38	32	28	26

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	10387	10387	10387
5°	12223	10414	9192
10°	14525	10366	8464
15°	17012	10275	7839
20°	19156	10156	7435
25°	19880	10020	6998
30°	18053	9849	6844
35°	14730	9615	6801
40°	11533	9314	6829
45°	9653	8939	6954
50°	8283	8416	7162
55°	7569	7849	7510
60°	6935	7266	7783
65°	6360	6651	8085
70°	5850	5998	8330
75°	5210	5275	8322
80°	4346	4320	8303
85°	3304	3264	7782



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	113.7	3.4
10°-20°	352.3	10.5
20°-30°	565.9	16.9
30°-40°	646.9	19.3
40°-50°	595.5	17.8
50°-60°	487.1	14.5
60°-70°	347.1	10.4
70°-80°	190.7	5.7
80°-90°	51.3	1.5
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°	1031.9	30.8
0°-40°	1678.8	50.1
0°-60°	2761.4	82.4
0°-90°	3350.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3350.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1168	1168	1168	1168	1168	
5°	1370	1292	1167	1055	1030	138
15°	1849	1588	1116	898	852	527
25°	2027	1772	1022	756	714	910
35°	1357	1691	886	630	627	844
45°	768	1246	711	519	553	599
55°	488	766	506	405	485	438
65°	302	424	316	284	384	302
75°	152	196	154	157	242	162
85°	32	40	32	44	76	39
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°	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5
2.5°	1258.2	1254.3	1252.4	1250.0	1249.6	1247.2	1242.4	1235.7	1227.1	1218.1	1218.1
5°	1369.8	1368.8	1361.6	1362.1	1353.1	1343.0	1335.4	1325.9	1307.3	1291.5	1280.6
7.5°	1476.6	1486.6	1484.2	1476.6	1463.2	1448.9	1433.7	1420.3	1386.0	1366.9	1351.2
10°	1609.2	1613.0	1606.3	1595.3	1583.4	1555.8	1535.7	1513.3	1476.1	1443.7	1415.1
12.5°	1725.5	1734.6	1722.7	1712.2	1684.1	1663.5	1643.5	1598.7	1559.6	1518.6	1477.1
15°	1848.6	1839.1	1845.3	1819.5	1799.5	1779.9	1728.9	1683.1	1638.7	1588.2	1544.8
17.5°	1955.4	1955.4	1944.0	1927.3	1906.3	1869.6	1818.5	1768.0	1718.9	1652.6	1591.1
20°	2025.1	2030.3	2017.0	1999.3	1974.0	1935.9	1895.3	1840.5	1775.1	1697.9	1628.3
22.5°	2058.4	2059.4	2054.6	2039.8	2019.3	1986.9	1945.4	1892.0	1822.8	1739.9	1666.9
25°	2027.0	2032.2	2030.8	2029.8	2019.3	2000.7	1967.4	1917.7	1854.8	1771.8	1693.1
27.5°	1916.3	1929.2	1940.2	1944.9	1956.4	1957.3	1947.3	1917.3	1865.8	1787.5	1699.8
30°	1758.9	1752.3	1781.8	1796.6	1835.7	1859.1	1875.8	1873.9	1844.3	1780.9	1697.4
32.5°	1549.1	1567.2	1588.2	1623.0	1669.3	1723.6	1764.7	1795.2	1792.3	1750.8	1681.2
35°	1357.4	1357.4	1384.1	1427.0	1476.1	1541.4	1610.1	1666.9	1701.7	1691.2	1642.1
37.5°	1149.4	1162.3	1192.8	1226.2	1286.3	1349.2	1439.9	1515.2	1588.2	1610.1	1584.9
40°	993.9	999.7	1032.1	1060.2	1121.7	1187.1	1262.9	1359.3	1443.2	1497.1	1500.4
42.5°	878.5	878.0	891.4	916.7	966.3	1024.5	1106.5	1200.9	1299.2	1375.5	1411.2
45°	767.9	766.9	780.7	806.5	841.8	893.3	964.4	1058.8	1159.4	1246.2	1302.5
47.5°	674.4	683.0	689.2	709.2	738.3	782.2	843.2	918.6	1015.4	1112.7	1188.5
50°	599.0	602.8	616.2	625.7	658.2	688.7	737.8	805.5	888.5	990.6	1072.6
52.5°	538.9	541.3	549.4	561.8	580.4	607.1	646.2	708.7	783.6	872.3	957.2
55°	488.4	486.9	492.2	500.3	516.5	538.9	567.6	615.2	680.6	766.0	844.2
57.5°	438.8	438.8	443.5	449.3	458.3	476.9	505.1	542.8	595.2	671.0	740.2
60°	390.1	393.5	395.4	401.1	408.7	422.6	443.5	473.1	517.5	579.5	648.2
62.5°	347.2	347.2	350.5	352.5	362.5	372.5	387.7	413.0	447.8	503.2	556.6
65°	302.4	305.2	305.2	309.1	317.6	325.3	337.2	356.3	384.9	424.5	474.5
67.5°	264.2	264.2	266.6	268.5	273.3	278.5	289.0	303.8	328.1	359.6	404.9
70°	225.1	226.5	225.6	228.0	230.8	236.1	243.7	256.1	273.8	300.9	334.3
72.5°	189.8	187.9	188.9	191.3	192.7	196.0	200.8	210.3	224.6	246.6	270.9
75°	151.7	150.7	154.0	153.1	155.5	158.3	162.6	169.8	180.8	196.0	214.6
77.5°	118.3	116.8	118.3	119.2	120.2	122.6	125.9	130.2	137.8	147.8	164.5
80°	84.9	84.4	85.4	86.3	86.8	90.6	91.6	95.9	99.2	106.8	114.9
82.5°	56.3	57.2	57.7	58.7	58.2	60.1	61.0	63.9	66.8	70.6	76.8
85°	32.4	31.0	32.4	32.4	32.4	34.8	34.3	36.2	38.2	40.1	44.4
87.5°	11.4	11.4	11.9	12.4	12.4	13.8	13.4	14.3	16.2	16.2	17.6
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5
2.5°	1215.2	1210.0	1206.2	1195.2	1188.5	1182.3	1176.6	1170.4	1163.7	1155.1	1149.9
5°	1269.1	1257.7	1241.0	1225.7	1208.5	1193.3	1180.9	1167.1	1151.8	1136.1	1122.2
7.5°	1328.7	1307.3	1281.5	1253.4	1226.7	1204.3	1180.9	1158.9	1137.5	1116.5	1096.9
10°	1388.4	1351.2	1317.3	1278.7	1243.4	1209.5	1179.0	1148.5	1121.7	1094.1	1069.3
12.5°	1443.7	1398.8	1349.2	1301.1	1253.9	1210.0	1172.3	1135.1	1100.8	1067.9	1038.8
15°	1486.1	1429.8	1371.2	1314.0	1259.6	1213.8	1164.7	1116.5	1080.7	1040.7	1008.7
17.5°	1534.8	1468.0	1409.8	1341.1	1273.4	1199.5	1147.5	1095.0	1052.1	1013.5	981.5
20°	1567.2	1493.8	1409.8	1332.1	1262.4	1196.1	1133.7	1073.6	1028.3	983.4	944.8
22.5°	1593.0	1517.1	1424.6	1343.5	1256.2	1176.1	1108.4	1049.3	995.8	953.4	916.7
25°	1606.3	1513.8	1425.6	1327.3	1240.0	1163.2	1086.9	1021.6	967.7	920.5	889.0
27.5°	1606.8	1511.9	1407.4	1310.1	1216.7	1133.7	1058.3	993.9	933.4	888.1	850.4
30°	1604.4	1499.5	1389.3	1283.0	1189.9	1105.1	1026.4	959.6	904.3	856.1	820.3
32.5°	1589.1	1482.3	1362.1	1250.5	1149.4	1064.0	991.5	925.3	866.1	822.2	784.6
35°	1554.8	1444.6	1324.0	1209.0	1113.2	1024.5	952.9	886.1	833.2	785.5	746.9
37.5°	1510.9	1407.9	1285.3	1165.1	1061.7	977.7	910.5	847.5	792.2	748.3	709.7
40°	1455.6	1358.8	1238.1	1113.2	1009.7	924.8	861.3	802.7	755.5	710.6	673.0
42.5°	1379.8	1305.4	1181.4	1059.7	951.5	871.4	809.8	761.2	712.5	672.0	634.3
45°	1298.7	1231.0	1120.8	1000.1	896.2	813.6	755.9	711.1	669.6	628.6	598.1
47.5°	1209.0	1153.7	1051.6	933.8	831.3	758.3	701.6	661.5	623.4	591.9	561.4
50°	1102.2	1073.1	977.7	870.9	771.2	696.3	649.6	608.6	580.4	549.9	521.3
52.5°	1003.0	979.6	901.9	797.0	706.3	640.5	590.4	558.0	530.4	507.9	485.0
55°	895.2	883.3	817.5	726.8	644.8	579.0	536.1	506.5	484.6	463.6	446.9
57.5°	796.0	795.0	736.9	659.1	579.0	523.2	482.2	457.9	438.8	424.0	409.7
60°	694.4	702.5	654.8	583.8	520.3	467.9	430.7	408.7	395.9	382.0	370.1
62.5°	602.4	614.8	571.4	515.6	453.1	410.2	381.5	364.9	350.5	340.5	331.5
65°	514.1	529.9	494.6	444.5	396.8	356.3	331.9	316.2	305.2	299.5	293.3
67.5°	436.4	445.0	421.1	382.0	342.4	307.1	287.1	273.3	263.7	261.4	254.2
70°	358.7	368.7	352.0	316.2	285.7	259.9	241.8	230.8	225.1	221.8	217.0
72.5°	296.2	300.5	283.8	259.0	234.7	213.2	199.8	191.7	185.1	183.6	181.2
75°	231.8	238.0	224.6	205.6	185.5	170.3	160.2	153.6	150.2	147.8	147.8
77.5°	175.0	180.3	172.6	156.0	144.0	130.7	124.0	117.8	116.4	114.0	114.9
80°	124.5	126.9	122.6	111.1	100.6	93.5	87.8	84.4	83.9	82.0	83.9
82.5°	82.5	83.0	78.2	73.0	64.9	61.0	57.2	55.8	55.3	55.3	54.4
85°	45.8	46.7	43.4	40.1	37.2	33.9	32.9	32.0	31.0	32.4	33.4
87.5°	17.6	18.1	17.6	16.2	15.3	14.3	13.8	14.8	13.4	14.3	14.8
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°	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5	1168.5
2.5°	1141.8	1138.0	1132.2	1122.7	1116.0	1108.9	1106.0	1107.0	1104.1	1100.3	1101.2
5°	1111.7	1100.8	1091.2	1077.9	1065.5	1055.0	1051.6	1047.3	1043.5	1041.1	1038.8
7.5°	1079.8	1064.5	1050.2	1036.9	1022.5	1009.2	1003.9	1000.1	998.2	991.5	988.7
10°	1049.3	1031.6	1014.4	998.7	983.9	969.1	963.9	959.1	952.4	949.6	946.2
12.5°	1016.8	999.2	980.6	961.5	946.7	934.8	925.7	922.4	915.7	912.9	910.9
15°	985.3	963.9	949.1	934.3	911.9	898.5	894.7	882.8	879.0	873.3	869.4
17.5°	953.9	933.8	911.9	894.7	880.9	864.2	855.1	849.9	842.7	837.5	830.3
20°	922.9	899.5	882.3	860.9	845.6	830.3	818.9	814.1	807.9	800.8	790.8
22.5°	892.8	867.1	850.4	830.3	811.3	793.6	784.1	777.4	765.0	763.6	754.5
25°	857.5	834.6	812.7	791.7	773.1	755.5	749.3	738.8	734.5	725.9	724.5
27.5°	824.1	799.8	776.0	753.1	736.9	724.5	713.5	706.8	702.5	695.8	696.3
30°	789.3	762.6	740.2	719.2	701.6	689.6	682.5	679.2	673.0	672.0	668.7
32.5°	752.1	727.8	704.4	685.8	667.7	657.2	653.9	650.5	646.7	647.2	646.2
35°	714.9	693.5	668.7	651.5	636.7	630.5	625.3	624.3	622.9	623.8	623.8
37.5°	678.7	655.3	634.8	619.1	610.5	601.9	599.5	599.0	599.5	600.5	602.8
40°	643.4	621.9	601.9	589.0	579.5	575.7	572.3	573.8	575.7	579.0	581.9
42.5°	608.1	587.6	570.9	558.0	549.0	547.0	547.5	550.4	550.9	555.6	560.9
45°	570.9	553.2	537.5	527.5	521.8	519.4	520.3	523.2	526.5	533.2	539.9
47.5°	536.6	520.8	507.0	497.0	492.7	491.7	493.6	497.4	505.1	511.7	519.4
50°	501.7	487.4	474.5	465.5	465.0	461.7	466.0	470.7	479.8	488.9	500.3
52.5°	467.4	453.6	442.6	435.4	433.5	433.5	438.8	447.4	455.5	467.4	477.9
55°	431.6	419.2	408.7	406.3	403.5	404.9	410.6	419.2	430.7	444.0	455.5
57.5°	394.9	384.4	376.8	373.4	372.0	376.8	383.5	392.5	407.3	420.7	433.1
60°	360.1	351.0	342.9	342.0	341.0	347.2	355.3	364.9	379.6	393.0	408.3
62.5°	322.9	315.7	310.5	309.1	309.1	315.3	324.3	336.7	350.5	364.9	381.1
65°	285.2	279.0	277.6	275.7	280.0	283.8	292.8	304.8	319.5	335.3	352.5
67.5°	250.4	246.6	243.7	243.7	247.1	254.2	262.3	274.2	289.5	306.2	321.5
70°	215.6	211.8	209.4	211.8	213.7	222.3	230.8	242.3	256.6	272.8	289.0
72.5°	179.3	179.8	180.3	179.8	181.7	189.8	198.4	209.4	223.2	238.9	253.7
75°	147.4	145.0	145.5	146.4	152.6	156.9	165.5	176.0	190.8	205.1	217.5
77.5°	114.5	113.5	115.9	115.9	121.6	126.9	134.0	144.5	157.4	170.3	180.3
80°	83.9	84.4	86.3	86.8	91.6	97.3	104.9	112.1	123.5	132.6	142.1
82.5°	56.8	57.7	60.1	63.4	65.3	68.7	75.4	83.0	91.1	100.6	106.4
85°	32.9	34.3	36.2	38.6	40.5	43.9	48.6	54.8	60.6	65.8	70.6
87.5°	16.2	16.2	17.6	18.6	20.0	21.9	25.3	27.7	31.5	35.3	37.2
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: P243491

CATALOG NUMBER: S124DR-H1020D927-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1168.5	1168.5	1168.5	1168.5
2.5°	1099.3	1098.9	1096.9	1097.9
5°	1037.3	1032.6	1032.1	1030.2
7.5°	983.9	982.5	982.5	978.7
10°	942.9	938.6	939.6	937.7
12.5°	903.8	901.4	898.5	895.7
15°	859.9	859.9	859.9	851.8
17.5°	825.6	825.1	822.7	822.2
20°	789.8	787.9	781.7	786.0
22.5°	753.6	752.1	746.9	747.8
25°	719.7	718.3	717.3	713.5
27.5°	690.6	691.1	692.0	689.6
30°	668.7	667.2	669.1	666.8
32.5°	648.2	648.2	646.2	646.7
35°	624.8	626.7	627.2	626.7
37.5°	604.3	606.7	608.6	606.7
40°	585.2	587.1	589.0	588.5
42.5°	565.2	568.5	569.9	571.4
45°	546.1	550.4	552.8	553.2
47.5°	526.5	531.8	536.6	536.1
50°	507.5	514.1	518.4	517.9
52.5°	488.4	495.1	500.3	502.7
55°	466.9	475.5	480.3	484.6
57.5°	445.5	455.0	459.8	461.7
60°	421.6	430.2	436.4	437.8
62.5°	394.9	404.0	412.1	414.0
65°	367.2	377.3	383.5	384.4
67.5°	335.3	344.8	351.0	353.9
70°	302.4	309.5	316.2	320.5
72.5°	265.7	274.2	280.4	283.3
75°	227.5	237.0	240.4	242.3
77.5°	187.9	193.6	198.9	199.4
80°	148.3	155.5	157.4	162.2
82.5°	109.2	115.9	114.5	116.4
85°	72.0	74.4	75.8	76.3
87.5°	38.2	39.6	40.5	41.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)