

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: P243516

Luminaire Tested: **S124DR-H1020D935-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243516
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-H1020D935-X4F0-XX-UDD-A-W
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3500K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3641.6 lumens
Efficiency: N/A
Efficacy: 115.6 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

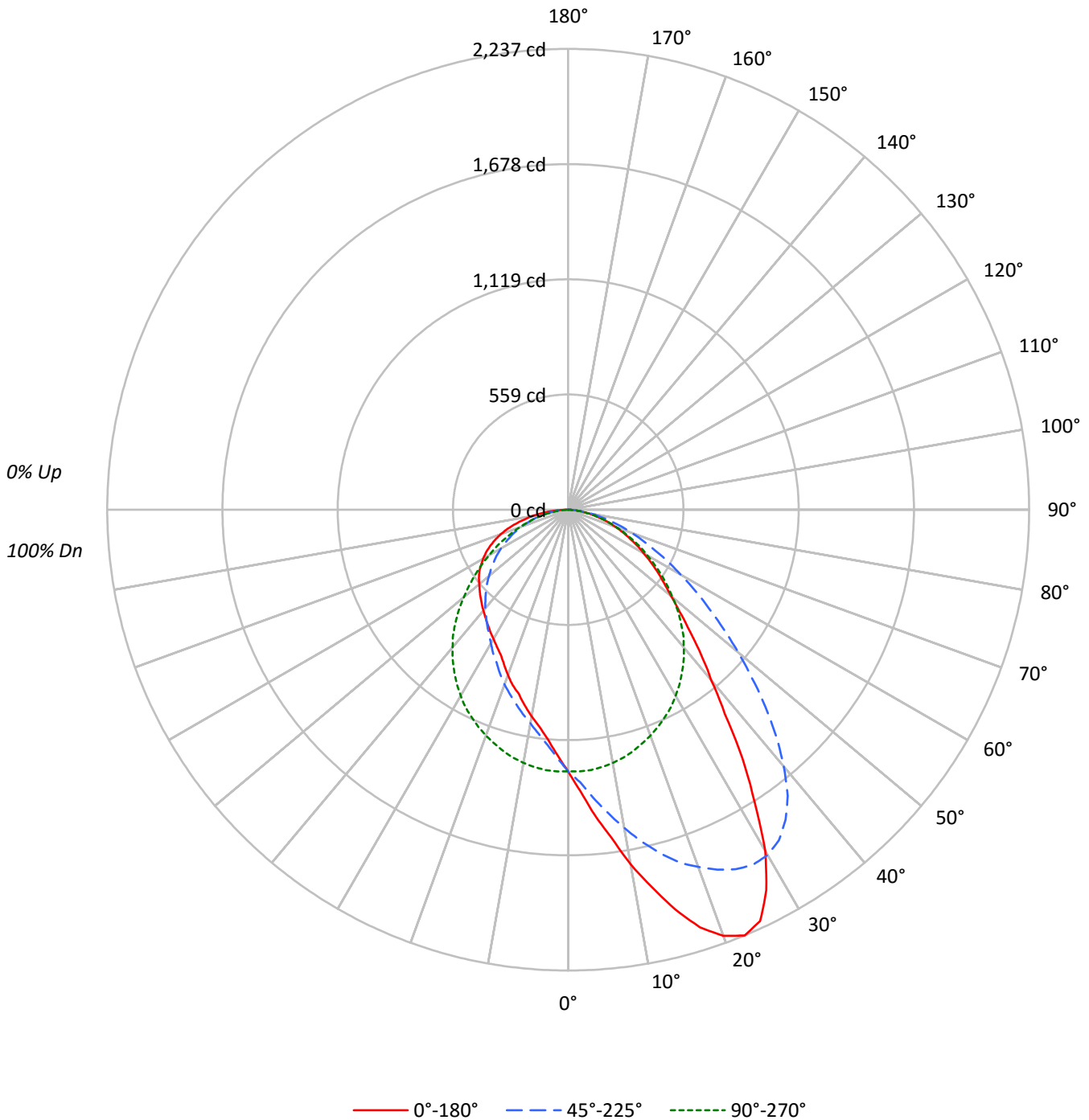
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	11289	11289	11289
5°	13283	11318	9991
10°	15787	11266	9198
15°	18490	11167	8520
20°	20820	11037	8081
25°	21608	10890	7606
30°	19622	10705	7438
35°	16009	10451	7391
40°	12535	10123	7423
45°	10492	9716	7559
50°	9004	9146	7784
55°	8226	8531	8162
60°	7538	7897	8460
65°	6911	7229	8788
70°	6360	6521	9052
75°	5660	5732	9043
80°	4725	4699	9020
85°	3590	3539	8455



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	123.6	3.4
10°-20°	382.9	10.5
20°-30°	615.1	16.9
30°-40°	703.1	19.3
40°-50°	647.2	17.8
50°-60°	529.4	14.5
60°-70°	377.3	10.4
70°-80°	207.3	5.7
80°-90°	55.7	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°	1121.5	30.8
0°-40°	1824.6	50.1
0°-60°	3001.3	82.4
0°-90°	3641.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3641.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1270	1270	1270	1270	1270	
5°	1489	1404	1268	1147	1120	150
15°	2009	1726	1214	977	926	573
25°	2203	1926	1110	821	776	989
35°	1475	1838	963	685	681	917
45°	835	1354	773	564	601	651
55°	531	832	550	440	527	476
65°	329	461	344	308	418	328
75°	165	213	167	170	263	176
85°	35	44	35	48	83	42
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°	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0
2.5°	1367.4	1363.3	1361.2	1358.6	1358.1	1355.5	1350.3	1343.1	1333.8	1323.9	1323.9
5°	1488.7	1487.7	1479.9	1480.5	1470.6	1459.7	1451.4	1441.1	1420.8	1403.7	1391.8
7.5°	1604.9	1615.7	1613.2	1604.9	1590.3	1574.8	1558.2	1543.7	1506.4	1485.6	1468.5
10°	1749.0	1753.1	1745.9	1733.9	1721.0	1690.9	1669.1	1644.8	1604.3	1569.1	1538.0
12.5°	1875.4	1885.3	1872.3	1860.9	1830.3	1808.1	1786.3	1737.6	1695.1	1650.5	1605.4
15°	2009.2	1998.8	2005.6	1977.6	1955.8	1934.5	1879.1	1829.3	1781.1	1726.2	1679.0
17.5°	2125.3	2125.3	2112.9	2094.7	2071.9	2032.0	1976.5	1921.6	1868.2	1796.1	1729.3
20°	2201.0	2206.7	2192.2	2173.0	2145.5	2104.0	2060.0	2000.4	1929.4	1845.4	1769.7
22.5°	2237.3	2238.3	2233.1	2217.0	2194.8	2159.5	2114.4	2056.4	1981.2	1891.0	1811.7
25°	2203.1	2208.8	2207.2	2206.2	2194.8	2174.5	2138.3	2084.3	2015.9	1925.7	1840.2
27.5°	2082.8	2096.8	2108.7	2113.9	2126.3	2127.4	2116.5	2083.8	2027.8	1942.8	1847.5
30°	1911.7	1904.5	1936.6	1952.7	1995.2	2020.6	2038.7	2036.7	2004.5	1935.6	1844.9
32.5°	1683.7	1703.3	1726.2	1764.0	1814.3	1873.4	1918.0	1951.1	1948.0	1902.9	1827.2
35°	1475.3	1475.3	1504.3	1550.9	1604.3	1675.4	1750.0	1811.7	1849.5	1838.1	1784.7
37.5°	1249.3	1263.3	1296.4	1332.7	1398.0	1466.5	1564.9	1646.8	1726.2	1750.0	1722.5
40°	1080.3	1086.5	1121.7	1152.3	1219.2	1290.2	1372.6	1477.3	1568.6	1627.1	1630.8
42.5°	954.8	954.3	968.8	996.3	1050.2	1113.4	1202.6	1305.2	1412.0	1495.0	1533.8
45°	834.6	833.5	848.6	876.6	914.9	970.9	1048.1	1150.8	1260.1	1354.5	1415.7
47.5°	733.0	742.3	749.0	770.8	802.4	850.1	916.5	998.4	1103.6	1209.3	1291.8
50°	651.1	655.2	669.7	680.1	715.3	748.5	801.9	875.5	965.7	1076.6	1165.8
52.5°	585.8	588.3	597.2	610.6	630.9	659.9	702.4	770.3	851.7	948.1	1040.4
55°	530.8	529.3	535.0	543.8	561.4	585.8	616.9	668.7	739.7	832.5	917.5
57.5°	476.9	476.9	482.1	488.3	498.1	518.4	548.9	589.9	646.9	729.3	804.5
60°	424.0	427.7	429.7	435.9	444.2	459.3	482.1	514.2	562.4	629.8	704.5
62.5°	377.4	377.4	381.0	383.1	394.0	404.8	421.4	448.9	486.7	546.9	604.9
65°	328.6	331.8	331.8	335.9	345.2	353.5	366.5	387.2	418.3	461.3	515.8
67.5°	287.2	287.2	289.8	291.8	297.0	302.7	314.1	330.2	356.6	390.8	440.1
70°	244.7	246.2	245.2	247.8	250.9	256.6	264.9	278.4	297.5	327.1	363.4
72.5°	206.3	204.2	205.3	207.9	209.4	213.0	218.2	228.6	244.2	268.0	294.4
75°	164.8	163.8	167.4	166.4	169.0	172.1	176.8	184.5	196.5	213.0	233.3
77.5°	128.6	127.0	128.6	129.6	130.6	133.2	136.8	141.5	149.8	160.7	178.8
80°	92.3	91.8	92.8	93.8	94.3	98.5	99.5	104.2	107.8	116.1	124.9
82.5°	61.2	62.2	62.7	63.8	63.2	65.3	66.4	69.5	72.6	76.7	83.5
85°	35.2	33.7	35.2	35.2	35.2	37.8	37.3	39.4	41.5	43.5	48.2
87.5°	12.4	12.4	13.0	13.5	13.5	15.0	14.5	15.6	17.6	17.6	19.2
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°	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0
2.5°	1320.8	1315.1	1310.9	1299.0	1291.8	1285.0	1278.8	1272.1	1264.8	1255.5	1249.8
5°	1379.4	1366.9	1348.8	1332.2	1313.5	1296.9	1283.5	1268.4	1251.9	1234.7	1219.7
7.5°	1444.2	1420.8	1392.8	1362.3	1333.2	1308.9	1283.5	1259.6	1236.3	1213.5	1192.2
10°	1509.0	1468.5	1431.7	1389.7	1351.4	1314.6	1281.4	1248.2	1219.2	1189.1	1162.2
12.5°	1569.1	1520.4	1466.5	1414.1	1362.8	1315.1	1274.1	1233.7	1196.4	1160.6	1129.0
15°	1615.2	1554.1	1490.3	1428.1	1369.0	1319.2	1265.8	1213.5	1174.6	1131.1	1096.3
17.5°	1668.1	1595.5	1532.3	1457.6	1384.0	1303.7	1247.2	1190.2	1143.5	1101.5	1066.8
20°	1703.3	1623.5	1532.3	1447.8	1372.1	1300.1	1232.2	1166.8	1117.6	1068.9	1026.9
22.5°	1731.3	1648.9	1548.4	1460.2	1365.4	1278.3	1204.7	1140.4	1082.3	1036.2	996.3
25°	1745.9	1645.3	1549.4	1442.6	1347.7	1264.3	1181.4	1110.3	1051.8	1000.4	966.2
27.5°	1746.4	1643.2	1529.7	1423.9	1322.3	1232.2	1150.3	1080.3	1014.4	965.2	924.2
30°	1743.8	1629.7	1510.0	1394.4	1293.3	1201.1	1115.5	1043.0	982.8	930.5	891.6
32.5°	1727.2	1611.1	1480.5	1359.2	1249.3	1156.5	1077.7	1005.6	941.4	893.7	852.7
35°	1689.9	1570.1	1439.0	1314.1	1209.9	1113.4	1035.7	963.1	905.6	853.7	811.8
37.5°	1642.2	1530.2	1397.0	1266.4	1153.9	1062.6	989.6	921.1	861.0	813.3	771.3
40°	1582.1	1476.8	1345.7	1209.9	1097.4	1005.1	936.2	872.4	821.1	772.4	731.4
42.5°	1499.6	1418.8	1284.0	1151.8	1034.1	947.1	880.2	827.3	774.4	730.4	689.4
45°	1411.5	1337.9	1218.2	1087.0	974.0	884.3	821.6	772.9	727.8	683.2	650.0
47.5°	1314.1	1253.9	1143.0	1015.0	903.5	824.2	762.5	719.0	677.5	643.3	610.1
50°	1197.9	1166.3	1062.6	946.5	838.2	756.8	706.0	661.4	630.9	597.7	566.6
52.5°	1090.1	1064.7	980.2	866.2	767.7	696.2	641.7	606.5	576.4	552.1	527.2
55°	973.0	960.0	888.5	790.0	700.8	629.3	582.6	550.5	526.7	503.9	485.7
57.5°	865.2	864.1	800.9	716.4	629.3	568.6	524.1	497.6	476.9	460.8	445.3
60°	754.7	763.6	711.7	634.5	565.5	508.5	468.1	444.2	430.2	415.2	402.3
62.5°	654.7	668.2	621.0	560.4	492.4	445.8	414.7	396.5	381.0	370.1	360.3
65°	558.8	575.9	537.5	483.1	431.3	387.2	360.8	343.7	331.8	325.5	318.8
67.5°	474.3	483.6	457.7	415.2	372.2	333.8	312.1	297.0	286.7	284.1	276.3
70°	389.8	400.7	382.6	343.7	310.5	282.5	262.8	250.9	244.7	241.0	235.9
72.5°	321.9	326.6	308.4	281.5	255.0	231.7	217.2	208.4	201.1	199.6	197.0
75°	251.9	258.7	244.2	223.4	201.6	185.1	174.2	166.9	163.3	160.7	160.7
77.5°	190.2	195.9	187.6	169.5	156.5	142.0	134.8	128.0	126.5	123.9	124.9
80°	135.3	137.9	133.2	120.8	109.4	101.6	95.4	91.8	91.2	89.2	91.2
82.5°	89.7	90.2	85.0	79.3	70.5	66.4	62.2	60.6	60.1	60.1	59.1
85°	49.8	50.8	47.2	43.5	40.4	36.8	35.8	34.7	33.7	35.2	36.3
87.5°	19.2	19.7	19.2	17.6	16.6	15.6	15.0	16.1	14.5	15.6	16.1
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0
2.5°	1241.0	1236.8	1230.6	1220.2	1213.0	1205.2	1202.1	1203.1	1200.0	1195.9	1196.9
5°	1208.3	1196.4	1186.0	1171.5	1158.0	1146.6	1143.0	1138.3	1134.2	1131.6	1129.0
7.5°	1173.6	1157.0	1141.4	1126.9	1111.4	1096.9	1091.2	1087.0	1084.9	1077.7	1074.6
10°	1140.4	1121.2	1102.6	1085.5	1069.4	1053.3	1047.6	1042.4	1035.2	1032.1	1028.4
12.5°	1105.2	1086.0	1065.8	1045.0	1029.0	1016.0	1006.1	1002.5	995.3	992.2	990.1
15°	1070.9	1047.6	1031.5	1015.5	991.1	976.6	972.5	959.5	955.3	949.1	945.0
17.5°	1036.7	1015.0	991.1	972.5	957.4	939.3	929.4	923.7	916.0	910.2	902.5
20°	1003.0	977.6	959.0	935.6	919.1	902.5	890.0	884.8	878.1	870.3	859.4
22.5°	970.4	942.4	924.2	902.5	881.7	862.6	852.2	844.9	831.5	829.9	820.1
25°	932.0	907.1	883.3	860.5	840.3	821.1	814.4	802.9	798.3	789.0	787.4
27.5°	895.7	869.3	843.4	818.5	800.9	787.4	775.5	768.2	763.6	756.3	756.8
30°	857.9	828.9	804.5	781.7	762.5	749.6	741.8	738.2	731.4	730.4	726.7
32.5°	817.5	791.0	765.6	745.4	725.7	714.3	710.7	707.1	702.9	703.4	702.4
35°	777.0	753.7	726.7	708.1	692.0	685.3	679.6	678.5	677.0	678.0	678.0
37.5°	737.6	712.2	689.9	672.8	663.5	654.2	651.6	651.1	651.6	652.6	655.2
40°	699.3	675.9	654.2	640.2	629.8	625.7	622.0	623.6	625.7	629.3	632.4
42.5°	660.9	638.6	620.5	606.5	596.6	594.6	595.1	598.2	598.7	603.9	609.6
45°	620.5	601.3	584.2	573.3	567.1	564.5	565.5	568.6	572.3	579.5	586.8
47.5°	583.2	566.1	551.0	540.1	535.5	534.4	536.5	540.7	548.9	556.2	564.5
50°	545.3	529.8	515.8	505.9	505.4	501.8	506.4	511.6	521.5	531.3	543.8
52.5°	508.0	493.0	481.0	473.3	471.2	471.2	476.9	486.2	495.0	508.0	519.4
55°	469.1	455.6	444.2	441.6	438.5	440.1	446.3	455.6	468.1	482.6	495.0
57.5°	429.2	417.8	409.5	405.9	404.3	409.5	416.8	426.6	442.7	457.2	470.7
60°	391.4	381.5	372.7	371.7	370.6	377.4	386.2	396.5	412.6	427.1	443.7
62.5°	350.9	343.2	337.5	335.9	335.9	342.6	352.5	366.0	381.0	396.5	414.2
65°	310.0	303.2	301.7	299.6	304.3	308.4	318.3	331.2	347.3	364.4	383.1
67.5°	272.1	268.0	264.9	264.9	268.5	276.3	285.1	298.1	314.6	332.8	349.4
70°	234.3	230.2	227.6	230.2	232.2	241.6	250.9	263.3	278.9	296.5	314.1
72.5°	194.9	195.4	195.9	195.4	197.5	206.3	215.6	227.6	242.6	259.7	275.8
75°	160.2	157.6	158.1	159.1	165.9	170.5	179.9	191.3	207.3	222.9	236.4
77.5°	124.4	123.4	126.0	126.0	132.2	137.9	145.7	157.1	171.1	185.1	195.9
80°	91.2	91.8	93.8	94.3	99.5	105.7	114.0	121.8	134.3	144.1	154.5
82.5°	61.7	62.7	65.3	68.9	71.0	74.6	81.9	90.2	99.0	109.4	115.6
85°	35.8	37.3	39.4	42.0	44.1	47.7	52.9	59.6	65.8	71.5	76.7
87.5°	17.6	17.6	19.2	20.2	21.8	23.8	27.5	30.1	34.2	38.4	40.4
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: P243516

CATALOG NUMBER: S124DR-H1020D935-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1270.0	1270.0	1270.0	1270.0
2.5°	1194.8	1194.3	1192.2	1193.3
5°	1127.4	1122.3	1121.7	1119.7
7.5°	1069.4	1067.8	1067.8	1063.7
10°	1024.8	1020.1	1021.2	1019.1
12.5°	982.3	979.7	976.6	973.5
15°	934.6	934.6	934.6	925.8
17.5°	897.3	896.8	894.2	893.7
20°	858.4	856.3	849.6	854.3
22.5°	819.0	817.5	811.8	812.8
25°	782.2	780.7	779.6	775.5
27.5°	750.6	751.1	752.1	749.6
30°	726.7	725.2	727.3	724.7
32.5°	704.5	704.5	702.4	702.9
35°	679.1	681.1	681.7	681.1
37.5°	656.8	659.4	661.4	659.4
40°	636.0	638.1	640.2	639.7
42.5°	614.3	617.9	619.4	621.0
45°	593.5	598.2	600.8	601.3
47.5°	572.3	578.0	583.2	582.6
50°	551.5	558.8	563.5	562.9
52.5°	530.8	538.1	543.8	546.4
55°	507.5	516.8	522.0	526.7
57.5°	484.2	494.5	499.7	501.8
60°	458.2	467.6	474.3	475.9
62.5°	429.2	439.1	447.9	449.9
65°	399.1	410.0	416.8	417.8
67.5°	364.4	374.8	381.5	384.6
70°	328.6	336.4	343.7	348.3
72.5°	288.7	298.1	304.8	307.9
75°	247.3	257.6	261.3	263.3
77.5°	204.2	210.5	216.2	216.7
80°	161.2	169.0	171.1	176.2
82.5°	118.7	126.0	124.4	126.5
85°	78.3	80.9	82.4	82.9
87.5°	41.5	43.0	44.1	44.6
90°	0.0	0.0	0.0	0.0

(END OF REPORT)