

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: P334123

Luminaire Tested: **S124DS-S1020D940-4F0-1E-UDD-A**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P334123
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-21)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S124DS-S1020D940-4F0-1E-UDD-A
Description: DEFINE 4 DIRECT LED LUMINAIRE, ASYMMETRIC DIFFUSER
PENDANT/SURFACE/WALL MOUNT, 1020 LUMENS PER FOOT
Light Source: 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3787.4 lumens
Efficiency: N/A
Efficacy: 108.8 lumens/watt
Spacing Criteria (0/90/45): 1.3 / 1.22 / 1.41
Luminous Opening: Rectangular (W 4' x L: 0.33' x H: 0')
CIE Type: Direct

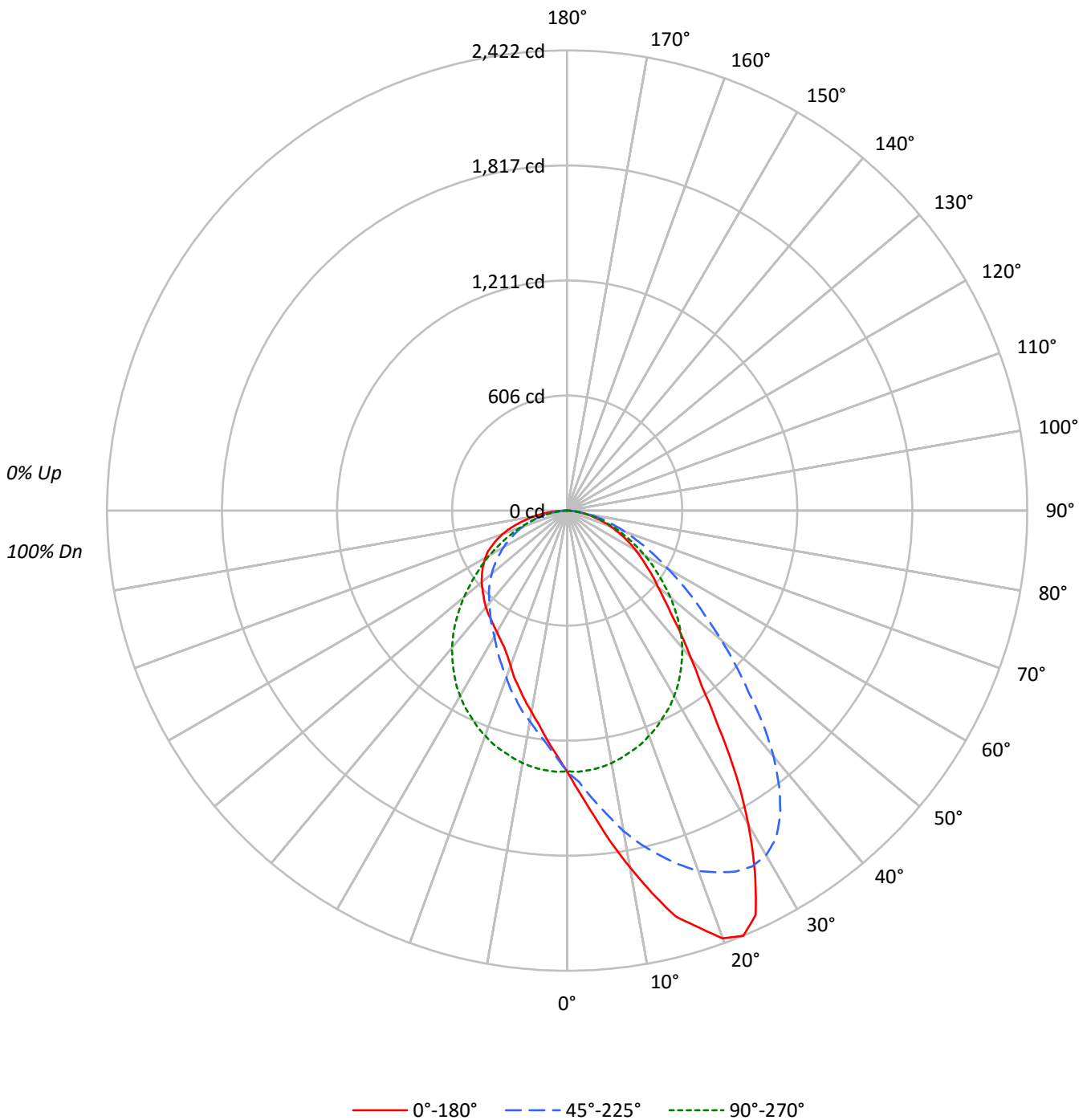
Input Watts (W): 34.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	109	105	101	97	107	103	99	96	98	95	93	95	92	90	91	89	87	85					85			
2	100	92	86	80	98	90	84	79	87	82	78	84	79	76	81	77	74	72					72			
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	67	64	62					62			
4	84	73	64	58	82	72	64	58	69	62	57	67	61	56	65	60	55	53					53			
5	78	65	57	50	76	64	56	50	62	55	50	60	54	49	58	53	49	46					46			
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	47	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	40	35	45	39	35	33					33			
9	58	45	37	32	57	45	37	32	44	37	32	43	36	32	42	36	31	30					30			
10	55	42	34	29	54	41	34	29	40	34	29	39	33	29	39	33	29	27					27			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	11080	11080	11080
5°	13049	11109	9805
10°	15624	11060	8828
15°	18486	10949	8107
20°	20584	10834	7464
25°	20917	10666	7020
30°	17798	10505	6880
35°	13684	10244	6881
40°	10666	9935	7010
45°	8894	9471	7128
50°	7827	8905	7370
55°	7170	8227	7667
60°	6720	7619	8023
65°	6256	6940	8319
70°	5717	6267	8509
75°	5109	5515	8406
80°	4282	4519	8140
85°	3159	3270	7790



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	133.6	3.5
10°-20°	412.3	10.9
20°-30°	655.0	17.3
30°-40°	727.8	19.2
40°-50°	661.9	17.5
50°-60°	540.9	14.3
60°-70°	386.1	10.2
70°-80°	212.4	5.6
80°-90°	57.4	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°	1200.9	31.7
0°-40°	1928.7	50.9
0°-60°	3131.5	82.7
0°-90°	3787.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3787.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1372	1372	1372	1372	1372	
5°	1610	1521	1371	1232	1210	163
15°	2212	1877	1310	1032	970	625
25°	2348	2096	1197	849	788	1042
35°	1388	1955	1039	701	698	879
45°	779	1350	830	581	624	612
55°	509	812	584	454	545	460
65°	328	453	363	316	436	324
75°	164	211	177	176	270	174
85°	34	44	35	50	84	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°	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5
2.5°	1482.9	1482.3	1476.6	1475.5	1471.5	1466.4	1465.2	1456.1	1437.9	1429.4	1427.1
5°	1610.2	1621.6	1606.8	1604.0	1602.3	1583.5	1573.8	1562.5	1536.3	1520.9	1509.0
7.5°	1759.2	1759.8	1753.5	1747.2	1736.4	1720.5	1698.9	1673.9	1643.8	1613.1	1591.5
10°	1905.9	1910.4	1903.0	1901.9	1872.9	1854.7	1818.3	1787.6	1752.4	1713.1	1677.3
12.5°	2060.5	2051.4	2048.6	2018.5	2019.0	1982.1	1938.3	1906.4	1847.3	1800.7	1750.1
15°	2211.8	2199.3	2191.3	2157.8	2141.3	2095.2	2050.3	2015.6	1944.5	1876.9	1825.7
17.5°	2299.3	2314.7	2294.2	2280.6	2235.7	2205.5	2160.6	2089.5	2036.6	1952.5	1893.9
20°	2396.0	2397.1	2386.9	2372.7	2339.1	2298.2	2248.2	2168.6	2102.0	2018.5	1929.8
22.5°	2422.1	2422.1	2419.3	2406.2	2382.9	2351.6	2301.0	2237.9	2153.8	2061.1	1972.4
25°	2348.2	2346.0	2351.1	2365.9	2356.2	2346.0	2317.0	2267.5	2192.4	2096.4	2000.8
27.5°	2139.0	2153.8	2184.5	2220.9	2247.0	2270.3	2268.6	2247.6	2194.1	2111.1	2009.4
30°	1909.3	1928.6	1950.2	1986.6	2057.1	2097.5	2141.8	2175.4	2156.6	2093.5	2000.3
32.5°	1656.8	1658.0	1692.7	1735.3	1798.4	1885.4	1962.2	2038.9	2071.9	2046.3	1972.4
35°	1388.5	1396.4	1431.1	1472.1	1551.1	1646.0	1751.8	1846.2	1924.1	1955.3	1915.5
37.5°	1163.3	1188.3	1214.5	1261.1	1333.3	1419.2	1532.9	1650.6	1764.9	1834.2	1841.6
40°	1012.1	1026.3	1043.9	1077.5	1136.6	1220.7	1315.1	1455.0	1578.4	1689.8	1726.2
42.5°	892.7	899.5	908.6	938.2	979.7	1063.2	1147.4	1266.2	1390.2	1528.9	1596.0
45°	779.0	787.5	805.7	823.3	857.4	915.4	995.6	1096.8	1221.3	1349.8	1462.4
47.5°	693.7	699.4	710.7	730.1	760.8	800.0	868.2	954.1	1075.8	1200.3	1320.8
50°	623.2	627.7	636.2	653.3	675.5	709.6	763.0	842.1	932.5	1058.1	1175.8
52.5°	567.4	568.6	574.3	584.5	601.0	628.3	669.8	731.8	814.2	922.8	1039.9
55°	509.4	511.7	517.4	525.9	541.3	559.5	593.0	641.9	715.3	812.5	914.3
57.5°	461.7	464.0	468.5	471.9	485.6	500.9	528.2	563.5	620.9	707.3	800.0
60°	416.2	415.1	420.7	423.6	432.1	444.6	464.5	498.1	546.4	612.9	696.5
62.5°	371.9	370.1	374.7	378.7	382.7	392.9	408.2	432.7	469.6	528.2	597.6
65°	327.5	325.2	328.1	332.6	337.2	342.9	354.8	378.1	409.4	452.6	507.7
67.5°	282.0	284.9	284.9	287.7	290.5	298.5	307.0	325.2	347.4	382.7	431.6
70°	242.2	242.8	245.1	245.1	246.8	253.6	260.4	270.1	291.7	323.5	361.6
72.5°	202.4	205.3	203.6	205.8	207.0	210.9	215.5	224.6	242.2	263.8	294.5
75°	163.8	165.5	165.5	166.0	167.7	169.4	173.4	180.2	193.3	210.9	233.1
77.5°	126.2	126.2	127.4	129.6	129.6	132.5	135.9	141.0	148.4	161.5	175.7
80°	92.1	93.2	92.7	93.8	93.8	96.1	97.2	104.0	106.9	114.9	125.7
82.5°	61.4	62.5	62.5	64.2	65.4	65.4	67.1	68.8	71.6	78.5	81.3
85°	34.1	35.3	34.1	35.3	37.0	37.5	39.2	39.8	42.1	43.8	47.8
87.5°	12.5	14.2	14.2	14.8	15.9	16.5	17.1	16.5	18.8	19.3	21.6
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°	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5
2.5°	1427.7	1419.7	1414.1	1409.5	1397.0	1389.6	1383.9	1376.0	1366.9	1357.2	1345.3
5°	1497.1	1477.7	1463.5	1441.9	1421.4	1404.4	1386.8	1370.8	1351.5	1330.5	1315.1
7.5°	1568.1	1541.4	1505.6	1477.7	1444.2	1415.2	1389.6	1362.9	1334.5	1307.2	1281.6
10°	1635.2	1598.3	1557.3	1509.0	1463.5	1423.2	1385.6	1349.2	1314.0	1278.7	1248.6
12.5°	1707.4	1659.1	1593.7	1535.2	1482.9	1425.4	1378.2	1331.6	1287.3	1249.7	1213.3
15°	1770.6	1704.0	1634.1	1558.5	1491.4	1428.3	1366.3	1310.0	1262.2	1213.3	1179.2
17.5°	1810.4	1727.9	1652.9	1573.8	1496.5	1417.5	1353.2	1290.1	1231.0	1183.2	1140.6
20°	1849.6	1767.7	1668.2	1589.2	1492.5	1410.6	1333.3	1261.1	1198.6	1146.8	1102.5
22.5°	1883.7	1785.9	1686.4	1576.1	1480.0	1391.9	1305.5	1232.7	1168.4	1113.3	1071.2
25°	1891.7	1783.1	1675.0	1571.6	1462.4	1359.5	1282.7	1197.4	1129.2	1071.8	1026.3
27.5°	1894.5	1779.7	1659.7	1547.1	1434.5	1340.7	1240.6	1166.2	1095.7	1034.8	991.6
30°	1888.3	1767.1	1635.8	1511.3	1398.1	1294.1	1209.9	1126.9	1054.7	994.4	949.0
32.5°	1868.4	1741.0	1605.1	1471.5	1353.2	1252.0	1164.4	1086.6	1016.6	957.5	909.2
35°	1826.3	1701.8	1557.9	1420.9	1300.9	1198.0	1119.5	1039.4	968.9	912.6	866.5
37.5°	1770.0	1654.0	1507.9	1365.2	1249.7	1145.1	1066.1	992.2	928.5	870.5	822.7
40°	1691.5	1592.6	1445.9	1307.7	1180.4	1082.0	1009.2	942.7	879.6	825.6	780.7
42.5°	1601.1	1518.1	1385.6	1237.2	1115.6	1016.6	946.1	888.1	829.6	780.7	735.7
45°	1490.2	1433.4	1306.0	1170.7	1042.8	949.5	881.9	829.6	779.5	730.6	693.1
47.5°	1366.9	1335.0	1224.2	1094.5	971.7	878.5	819.9	769.9	724.4	681.7	648.2
50°	1242.3	1228.7	1136.0	1012.1	896.1	809.7	750.5	709.0	671.5	635.1	603.8
52.5°	1119.5	1122.4	1041.1	930.2	825.0	742.6	684.0	645.9	614.6	586.8	559.5
55°	993.9	1009.8	944.4	843.2	747.1	672.1	619.2	584.5	561.8	537.3	516.3
57.5°	878.5	905.2	848.3	755.6	674.3	602.7	556.1	529.3	504.3	488.4	471.9
60°	765.9	790.9	748.8	673.8	598.1	539.0	495.2	471.9	450.9	440.6	429.8
62.5°	665.8	687.4	659.0	590.8	527.6	471.4	436.1	413.9	401.4	390.0	383.8
65°	571.4	590.2	563.5	512.9	456.6	411.1	380.9	363.3	349.7	345.1	337.2
67.5°	478.2	495.2	481.0	436.7	388.9	353.1	329.2	310.4	302.5	297.9	292.8
70°	396.9	413.9	398.6	361.0	326.4	297.4	275.2	265.5	257.0	255.3	247.3
72.5°	328.1	338.3	323.0	295.7	267.2	243.9	228.0	217.8	214.4	210.9	207.5
75°	256.4	266.7	256.4	233.7	212.6	195.6	180.8	176.8	171.7	170.0	167.2
77.5°	192.2	201.8	193.9	178.5	162.0	147.8	139.3	133.6	133.0	129.6	130.8
80°	138.7	144.4	137.0	127.4	114.9	105.8	100.1	97.2	93.8	92.7	95.0
82.5°	89.8	91.5	88.7	83.0	74.5	69.4	66.0	62.5	62.5	63.1	62.5
85°	51.7	51.2	50.6	44.9	42.1	38.1	35.8	35.3	34.7	35.8	37.0
87.5°	21.6	22.2	21.6	19.3	17.6	15.9	15.4	14.8	15.4	15.9	16.5
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°	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5	1372.5
2.5°	1339.6	1334.5	1327.1	1316.8	1308.3	1299.2	1296.9	1293.5	1300.3	1294.7	1292.9
5°	1302.0	1290.1	1274.8	1257.1	1246.9	1232.1	1229.3	1223.6	1217.9	1217.3	1211.6
7.5°	1262.8	1246.3	1227.0	1208.8	1192.9	1177.0	1166.7	1165.6	1156.5	1151.9	1146.3
10°	1225.3	1203.7	1180.4	1163.3	1144.0	1126.9	1115.0	1108.2	1102.5	1096.2	1090.5
12.5°	1180.9	1157.6	1139.4	1120.7	1096.8	1084.8	1063.2	1050.2	1050.2	1051.9	1034.8
15°	1148.5	1125.8	1096.2	1070.1	1057.6	1032.5	1021.7	1008.1	999.6	991.0	984.2
17.5°	1108.7	1080.9	1058.1	1028.6	1005.2	986.5	971.7	964.3	950.7	938.2	929.6
20°	1071.8	1041.6	1017.2	985.3	959.2	934.7	922.8	911.4	901.8	891.5	881.9
22.5°	1034.2	1002.4	971.1	940.4	916.5	890.4	879.0	862.5	853.4	848.9	839.2
25°	994.4	960.3	926.2	896.6	871.6	848.9	833.5	821.6	811.4	806.8	800.6
27.5°	951.2	917.7	885.3	851.2	822.2	805.7	793.2	783.5	777.2	770.4	767.6
30°	910.3	875.0	839.8	808.5	782.4	765.9	754.5	748.2	743.7	740.9	738.0
32.5°	868.8	834.1	796.6	768.7	746.0	731.8	723.8	717.5	715.8	715.3	714.7
35°	823.9	788.6	754.5	728.9	706.7	701.1	693.7	690.3	689.1	693.1	694.8
37.5°	780.7	747.7	715.8	690.3	675.5	666.4	663.5	663.0	666.9	670.4	674.3
40°	739.2	707.3	677.7	656.1	642.5	637.4	636.2	639.1	643.6	647.6	652.2
42.5°	698.8	667.5	641.4	621.5	612.9	608.4	609.5	612.4	619.2	624.3	631.7
45°	656.7	630.6	604.4	587.9	580.0	581.1	581.1	586.2	592.5	599.9	607.2
47.5°	617.5	590.8	568.6	554.4	550.4	548.7	551.5	558.3	566.9	575.4	585.6
50°	577.7	552.7	533.9	521.4	516.8	518.5	523.1	529.3	540.1	551.5	562.3
52.5°	537.3	515.1	498.1	486.7	483.9	487.3	491.8	502.6	511.7	524.2	537.9
55°	495.2	475.9	462.3	453.7	452.6	454.3	459.4	470.2	483.9	499.2	511.7
57.5°	453.7	437.2	424.2	417.9	418.5	419.6	427.6	440.6	454.3	470.8	486.7
60°	411.7	396.9	386.6	382.1	382.7	386.1	396.3	408.2	426.4	442.4	459.4
62.5°	371.9	359.3	349.7	345.7	344.6	353.1	362.8	375.3	393.5	411.7	430.4
65°	328.6	318.4	310.4	308.2	309.9	315.6	328.1	344.6	359.9	378.7	398.0
67.5°	286.6	278.0	272.3	273.5	275.2	283.2	294.0	308.2	325.2	344.6	364.5
70°	246.8	238.8	234.3	234.8	238.2	248.5	257.6	271.8	290.5	310.4	326.4
72.5°	205.8	201.3	197.3	200.1	203.6	209.8	221.7	236.0	251.9	270.1	287.1
75°	164.3	164.3	162.0	163.8	168.9	175.7	184.2	199.0	215.5	230.3	243.9
77.5°	129.1	127.4	128.5	130.2	133.6	142.1	151.8	162.6	175.7	191.0	202.4
80°	93.2	93.8	96.7	100.1	101.2	107.5	117.7	127.4	137.0	149.5	160.3
82.5°	64.2	64.8	66.0	70.5	71.6	78.5	84.1	93.8	102.3	109.7	118.3
85°	38.1	38.1	40.9	42.6	45.5	50.0	54.0	59.7	67.7	73.3	81.9
87.5°	18.2	18.2	20.5	21.6	23.3	26.2	27.3	33.5	35.8	38.7	43.8
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: P334123

CATALOG NUMBER: S124DS-S1020D940-4F0-1E-UDD-A

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1372.5	1372.5	1372.5	1372.5
2.5°	1291.8	1290.7	1286.7	1286.1
5°	1208.2	1205.4	1203.7	1209.9
7.5°	1145.1	1142.8	1137.7	1136.0
10°	1084.8	1082.6	1078.0	1076.9
12.5°	1026.9	1021.7	1021.7	1023.4
15°	976.8	974.5	968.3	970.0
17.5°	925.6	923.4	914.8	923.4
20°	877.9	873.3	869.4	868.8
22.5°	832.4	828.4	829.0	824.4
25°	796.0	792.0	790.9	788.1
27.5°	766.4	764.2	761.9	763.0
30°	739.7	739.2	738.0	738.0
32.5°	717.5	717.5	718.7	718.7
35°	697.1	698.8	699.9	698.2
37.5°	678.9	680.0	681.7	683.4
40°	657.3	661.3	662.4	665.2
42.5°	636.8	641.4	644.8	644.8
45°	615.8	620.3	624.3	624.3
47.5°	594.2	600.4	604.4	605.0
50°	572.0	580.0	583.9	586.8
52.5°	550.4	558.3	564.0	565.2
55°	524.8	536.2	542.4	544.7
57.5°	502.1	512.3	519.1	520.8
60°	474.8	486.1	495.2	496.9
62.5°	446.9	458.8	466.8	471.9
65°	413.9	425.9	433.8	435.5
67.5°	379.2	391.8	396.9	400.3
70°	342.3	352.0	357.6	360.5
72.5°	300.2	310.4	317.3	317.3
75°	257.0	266.1	269.5	269.5
77.5°	212.1	217.2	221.7	222.9
80°	168.9	171.7	175.1	175.1
82.5°	124.5	126.8	130.2	129.6
85°	80.7	85.9	85.3	84.1
87.5°	45.5	46.1	47.8	48.9
90°	0.0	0.0	0.0	0.0

(END OF REPORT)