

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: P242754

Luminaire Tested: **S124RDR-S1020D930-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242754
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-31)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S124RDR-S1020D930-X4F0-XX-UDD-A-W
Description: DEFINE 4 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 3000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3261.7 lumens
Efficiency: N/A
Efficacy: 93.7 lumens/watt
Spacing Criteria (0/90/45): 1.27 / 1.22 / 1.39
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')
CIE Type: Direct

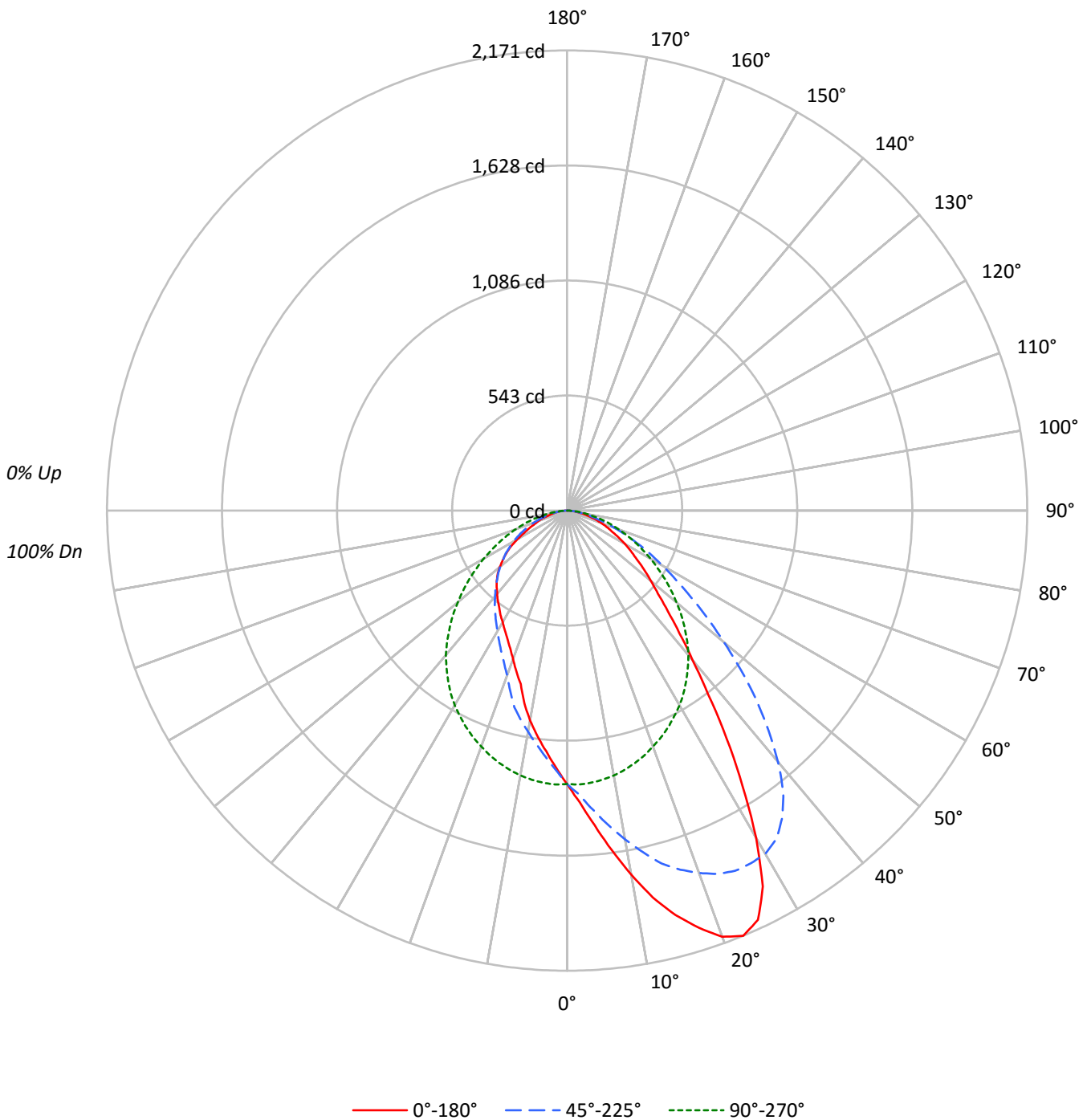
Input Watts (W): 34.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	110	106	102	98	107	103	100	97	99	96	94	95	93	91	92	90	88	86
2	101	93	87	82	98	92	86	81	88	83	79	85	81	77	82	79	76	74
3	93	83	76	70	90	81	75	69	79	73	68	76	71	67	73	69	65	63
4	85	74	66	60	83	73	65	59	71	64	59	68	63	58	66	61	57	55
5	79	67	58	52	77	66	58	52	64	57	51	62	56	51	60	55	50	48
6	73	61	52	46	71	60	52	46	58	51	46	56	50	45	55	49	45	43
7	68	55	47	41	66	54	47	41	53	46	41	52	45	40	50	44	40	38
8	64	51	42	37	62	50	42	37	49	42	37	47	41	36	46	40	36	34
9	59	47	39	33	58	46	38	33	45	38	33	44	38	33	43	37	33	31
10	56	43	35	30	55	43	35	30	42	35	30	41	34	30	40	34	30	28

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	11469	11469	11469
5°	13303	11503	10168
10°	15738	11454	9075
15°	18179	11348	7798
20°	20240	11202	7052
25°	20895	11059	6547
30°	18292	10885	6243
35°	14238	10628	6058
40°	10677	10333	5960
45°	8430	9862	5907
50°	7118	9316	5736
55°	6204	8717	5430
60°	5582	8096	4805
65°	4920	7425	4133
70°	4431	6729	3729
75°	3713	5962	3177
80°	3138	5083	2979
85°	2652	3978	2652



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	124.9	3.8
10°-20°	377.3	11.6
20°-30°	591.0	18.1
30°-40°	656.3	20.1
40°-50°	581.6	17.8
50°-60°	453.2	13.9
60°-70°	296.5	9.1
70°-80°	145.4	4.5
80°-90°	35.4	1.1
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°	1093.2	33.5
0°-40°	1749.5	53.6
0°-60°	2784.3	85.4
0°-90°	3261.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3261.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1290	1290	1290	1290	1290	
5°	1491	1419	1289	1167	1140	150
15°	1976	1725	1233	961	847	562
25°	2130	1876	1128	735	668	951
35°	1312	1769	979	591	558	821
45°	671	1261	784	469	470	529
55°	400	713	562	354	350	364
65°	234	366	353	229	196	235
75°	108	139	174	111	92	119
85°	26	28	39	28	26	30
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°	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3
2.5°	1378.7	1383.3	1378.7	1378.1	1372.9	1371.4	1369.3	1362.5	1350.1	1342.8	1344.3
5°	1490.9	1503.9	1496.7	1495.6	1484.2	1472.8	1465.5	1448.8	1431.2	1419.2	1409.3
7.5°	1615.7	1623.5	1618.3	1612.6	1592.8	1586.6	1569.4	1549.7	1520.1	1497.7	1477.4
10°	1743.6	1749.8	1747.8	1734.2	1720.7	1693.2	1677.6	1646.9	1606.9	1575.2	1545.5
12.5°	1869.4	1876.2	1853.8	1858.0	1829.4	1809.1	1782.1	1741.5	1693.7	1650.5	1611.6
15°	1975.5	1967.1	1967.1	1956.7	1928.1	1898.0	1872.5	1832.0	1773.7	1724.9	1673.4
17.5°	2062.8	2066.4	2062.3	2035.8	2015.0	1984.3	1938.5	1892.3	1841.8	1776.3	1725.4
20°	2139.7	2139.7	2135.0	2118.4	2089.3	2056.0	2005.6	1954.1	1885.5	1819.5	1760.2
22.5°	2170.9	2173.0	2167.3	2154.3	2128.8	2096.6	2055.5	2003.0	1931.8	1855.4	1778.4
25°	2130.4	2140.2	2141.3	2137.6	2129.8	2110.1	2073.2	2019.6	1956.2	1875.6	1796.6
27.5°	1999.4	2012.4	2017.6	2029.0	2050.3	2058.1	2053.4	2017.6	1956.2	1876.7	1798.2
30°	1782.1	1792.5	1826.3	1870.4	1904.8	1935.9	1963.0	1970.3	1939.1	1869.4	1785.7
32.5°	1540.9	1555.9	1589.7	1638.1	1701.0	1759.2	1828.3	1865.2	1872.0	1837.2	1761.3
35°	1312.1	1322.5	1353.7	1403.6	1472.2	1550.7	1646.9	1721.8	1772.7	1769.1	1721.8
37.5°	1092.7	1107.3	1139.0	1180.1	1247.7	1348.0	1439.0	1539.3	1630.8	1675.5	1651.6
40°	920.1	920.7	951.3	994.0	1056.3	1141.1	1242.5	1356.8	1461.8	1547.6	1564.2
42.5°	783.9	783.9	801.6	848.4	889.0	967.5	1063.1	1176.4	1303.8	1406.2	1457.2
45°	670.6	675.3	691.9	719.5	754.8	822.4	899.9	1005.4	1143.2	1260.6	1333.9
47.5°	581.2	589.5	599.4	624.3	653.5	700.8	766.8	865.6	979.9	1110.4	1211.8
50°	514.7	515.7	529.2	541.7	566.1	602.0	658.1	737.2	840.1	964.3	1080.3
52.5°	457.5	457.0	463.7	480.3	499.1	525.1	567.7	637.9	726.2	834.4	955.0
55°	400.3	402.9	409.1	421.6	436.7	456.4	492.3	546.4	618.1	713.2	821.9
57.5°	356.6	358.2	363.9	368.6	383.1	397.7	426.8	465.8	528.7	608.2	714.8
60°	314.0	314.5	316.1	323.9	334.8	348.3	366.5	398.2	449.2	520.4	600.4
62.5°	272.4	273.4	276.0	281.2	289.0	297.4	316.6	340.5	380.5	438.8	508.9
65°	233.9	234.5	238.1	240.2	246.9	255.2	269.3	286.4	315.6	366.5	421.1
67.5°	201.7	201.7	201.7	204.8	210.0	215.7	225.1	239.7	263.0	295.8	346.7
70°	170.5	170.5	171.6	173.1	175.7	180.4	185.1	195.5	211.6	237.1	274.0
72.5°	141.4	141.9	143.0	143.0	144.0	147.6	150.8	156.5	167.4	185.1	213.1
75°	108.1	109.7	112.3	114.4	117.0	116.4	120.1	124.2	127.9	139.3	156.5
77.5°	85.3	84.2	84.2	86.3	86.8	87.3	89.9	93.6	96.7	102.9	109.2
80°	61.3	61.3	62.9	63.4	62.9	63.4	66.0	67.6	68.6	70.7	76.4
82.5°	42.6	43.7	42.6	43.1	43.7	44.2	46.3	46.3	47.3	47.8	49.4
85°	26.0	26.5	27.0	26.0	26.0	26.0	27.0	27.6	28.6	28.1	29.1
87.5°	11.4	10.9	11.4	11.4	12.0	11.4	12.0	13.0	12.0	12.5	12.5
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3
2.5°	1339.1	1331.9	1328.2	1319.9	1310.0	1304.8	1300.2	1293.4	1284.6	1275.2	1268.4
5°	1396.9	1384.4	1368.8	1350.1	1333.4	1317.3	1303.3	1289.2	1273.1	1256.5	1239.9
7.5°	1454.0	1431.7	1407.8	1379.2	1351.6	1326.2	1303.3	1280.9	1255.5	1232.6	1211.3
10°	1514.3	1481.1	1444.2	1405.2	1366.2	1332.4	1299.1	1269.0	1235.7	1206.1	1181.1
12.5°	1563.2	1522.7	1476.4	1425.4	1376.6	1333.9	1294.4	1252.9	1213.9	1181.1	1145.8
15°	1618.3	1564.8	1505.0	1446.8	1385.9	1330.3	1278.8	1233.1	1189.9	1144.7	1113.0
17.5°	1656.3	1594.4	1523.7	1456.1	1386.5	1322.0	1263.8	1210.7	1161.4	1116.1	1078.7
20°	1689.5	1619.3	1538.8	1459.2	1378.7	1308.5	1244.5	1184.2	1132.8	1082.9	1043.9
22.5°	1708.2	1628.7	1538.8	1454.6	1370.3	1292.9	1221.1	1157.7	1100.5	1050.6	1006.4
25°	1709.3	1626.1	1536.2	1440.5	1349.0	1268.4	1195.7	1127.6	1065.2	1015.3	969.5
27.5°	1705.1	1609.0	1518.5	1421.3	1327.2	1241.4	1166.0	1093.8	1031.9	978.9	932.1
30°	1692.6	1587.6	1488.9	1387.0	1291.3	1209.7	1129.1	1060.5	995.5	939.9	892.6
32.5°	1665.6	1561.6	1453.5	1348.5	1251.3	1166.6	1091.2	1022.0	958.6	901.4	850.5
35°	1628.2	1522.7	1407.2	1300.2	1205.0	1117.7	1045.9	979.4	918.6	857.8	804.7
37.5°	1585.0	1474.8	1361.0	1243.5	1148.9	1065.7	998.6	934.7	875.4	819.8	761.1
40°	1518.5	1420.2	1301.7	1185.3	1087.5	1008.0	947.2	890.5	830.7	775.6	716.9
42.5°	1437.9	1357.9	1237.8	1120.8	1024.6	948.7	893.1	838.0	785.0	732.0	670.1
45°	1346.4	1283.0	1170.7	1058.4	961.2	885.3	833.3	784.5	736.6	685.7	628.0
47.5°	1244.5	1197.7	1100.0	982.5	891.6	821.9	772.0	731.4	689.3	637.9	585.9
50°	1137.4	1109.9	1016.3	911.3	825.5	762.6	711.2	673.7	639.9	591.1	545.8
52.5°	1023.1	1011.6	936.3	837.0	754.8	693.5	651.4	618.6	584.3	545.8	504.3
55°	906.6	914.4	847.4	760.5	682.6	630.6	590.6	562.5	533.4	499.1	466.3
57.5°	785.5	815.1	765.2	686.7	611.3	562.5	531.8	506.9	482.4	453.3	423.7
60°	678.9	702.8	677.4	610.3	546.4	501.7	473.6	455.4	431.0	405.0	383.7
62.5°	575.0	601.0	588.5	537.5	479.3	442.4	418.5	401.8	385.2	363.4	341.0
65°	491.3	507.9	500.6	463.2	421.1	388.3	365.5	353.0	336.3	319.7	300.0
67.5°	393.0	425.8	420.6	399.8	359.2	333.2	317.1	305.7	290.1	277.6	263.6
70°	309.3	338.9	338.4	322.3	302.6	278.6	268.2	258.9	245.4	233.4	222.5
72.5°	239.1	265.6	270.8	259.4	247.5	230.8	220.9	215.2	202.2	194.9	186.6
75°	177.3	197.0	202.2	202.2	196.0	186.6	177.8	173.6	164.3	157.0	151.8
77.5°	124.8	138.3	146.1	147.6	148.2	144.5	136.2	133.1	125.8	123.2	117.5
80°	82.1	90.5	99.8	102.9	105.5	104.5	101.4	99.3	92.5	89.9	87.9
82.5°	50.4	54.1	61.3	69.1	67.6	71.2	68.6	67.1	62.4	61.9	59.8
85°	29.6	30.2	31.2	35.9	38.5	39.5	40.0	39.0	37.4	37.4	33.8
87.5°	12.5	12.0	13.0	13.0	13.5	15.6	17.2	17.7	16.1	14.6	13.0
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°	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3	1290.3
2.5°	1261.2	1256.0	1249.2	1241.4	1232.1	1223.7	1220.1	1223.2	1224.8	1220.6	1220.1
5°	1228.4	1215.4	1205.0	1189.4	1177.0	1166.6	1159.3	1156.2	1157.2	1148.9	1146.8
7.5°	1192.0	1178.0	1160.8	1143.2	1126.5	1112.0	1104.2	1100.5	1091.7	1088.1	1082.3
10°	1157.2	1136.4	1119.8	1097.9	1078.2	1060.0	1051.1	1043.9	1035.0	1030.9	1022.0
12.5°	1121.3	1096.4	1077.7	1054.8	1034.5	1011.6	1003.3	988.2	973.2	963.3	951.3
15°	1088.1	1058.9	1036.6	1009.6	985.6	960.7	938.3	913.4	904.0	884.3	872.8
17.5°	1048.5	1018.4	993.4	958.6	922.7	892.6	867.6	841.6	827.6	814.1	808.4
20°	1009.6	982.5	944.1	901.9	860.9	826.6	807.3	791.7	776.1	767.3	761.1
22.5°	972.6	936.3	890.0	843.7	802.7	777.7	762.1	746.0	734.0	725.7	716.9
25°	930.5	885.3	838.0	786.0	757.9	734.6	716.9	703.9	696.1	685.2	681.0
27.5°	889.5	834.9	781.3	746.0	716.9	694.5	678.4	669.1	658.7	651.4	645.7
30°	840.6	785.0	738.2	704.9	675.3	657.6	645.1	633.7	625.9	620.2	616.0
32.5°	792.3	736.6	699.2	662.8	641.0	623.8	610.3	602.5	596.8	589.0	586.9
35°	746.0	696.6	662.3	630.1	606.2	590.6	580.2	571.3	566.1	564.0	562.5
37.5°	700.8	659.7	621.7	595.8	573.4	561.4	547.9	543.8	540.1	535.5	537.5
40°	658.1	620.2	587.4	559.4	542.2	528.7	521.4	516.2	513.1	513.1	513.1
42.5°	621.2	584.3	552.6	528.2	511.0	500.1	491.8	487.6	487.1	486.6	489.7
45°	582.8	548.4	516.2	495.4	480.9	469.4	464.8	461.1	461.1	463.2	463.7
47.5°	544.3	512.1	486.1	462.2	448.6	441.4	437.2	435.1	435.1	437.7	439.8
50°	509.5	477.7	452.3	431.5	419.0	412.2	408.6	407.6	408.6	408.6	412.2
52.5°	471.5	444.0	419.0	402.4	387.8	381.6	380.0	378.5	379.0	381.1	382.1
55°	434.6	409.1	385.2	368.6	358.2	354.0	349.3	349.9	348.8	349.9	349.9
57.5°	397.2	374.8	351.4	337.9	329.1	322.8	317.6	319.2	317.6	317.6	317.1
60°	361.3	336.3	318.7	306.7	296.3	291.1	286.4	287.5	285.9	284.9	282.8
62.5°	322.3	302.6	285.9	274.5	266.7	260.4	255.8	254.2	250.1	245.9	240.7
65°	284.9	267.7	252.6	241.7	233.9	229.3	225.6	222.5	214.7	206.4	202.2
67.5°	248.0	235.5	220.9	211.6	205.3	199.1	192.3	186.6	178.8	173.6	171.0
70°	212.6	200.7	188.7	179.9	173.1	167.4	159.6	156.0	150.8	148.7	146.1
72.5°	178.8	167.9	157.0	149.2	141.9	137.8	132.0	128.4	126.8	126.3	123.7
75°	144.5	135.7	127.4	120.1	114.4	111.2	108.6	106.1	105.0	100.3	97.7
77.5°	111.2	105.0	99.8	94.1	90.5	88.4	82.7	79.0	76.9	74.3	73.8
80°	82.1	78.0	72.8	69.7	63.9	61.9	59.8	59.3	58.7	58.2	57.7
82.5°	56.7	52.5	47.3	45.7	45.2	44.2	43.1	42.6	42.1	42.6	42.6
85°	31.2	29.1	29.1	28.6	28.1	27.6	27.0	27.0	26.5	27.0	26.5
87.5°	13.0	12.5	12.5	11.4	12.0	12.0	11.4	11.4	12.0	10.9	10.9
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: P242754

CATALOG NUMBER: S124RDR-S1020D930-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1290.3	1290.3	1290.3	1290.3
2.5°	1217.0	1218.0	1214.4	1213.3
5°	1142.6	1141.6	1139.0	1139.5
7.5°	1078.2	1074.5	1077.1	1073.0
10°	1020.0	1014.2	1009.6	1005.4
12.5°	940.4	935.7	929.0	931.6
15°	866.1	858.3	845.8	847.4
17.5°	799.5	800.6	793.3	795.4
20°	750.2	746.5	747.0	745.5
22.5°	715.8	711.2	706.5	702.8
25°	676.3	673.2	668.5	667.5
27.5°	641.5	641.0	638.9	636.3
30°	611.9	610.8	609.8	608.2
32.5°	585.4	584.8	583.8	584.3
35°	560.4	559.9	558.8	558.3
37.5°	537.0	538.6	537.5	537.5
40°	512.6	513.1	514.1	513.6
42.5°	492.3	492.3	493.9	491.8
45°	467.4	470.5	469.9	469.9
47.5°	440.8	444.5	445.0	445.0
50°	414.8	413.8	415.4	414.8
52.5°	383.1	383.7	383.1	382.6
55°	350.4	350.9	349.9	350.4
57.5°	315.6	313.5	315.0	314.0
60°	277.6	273.4	272.4	270.3
62.5°	235.0	232.4	228.2	230.8
65°	198.1	196.0	194.4	196.5
67.5°	168.4	167.4	167.4	166.4
70°	146.1	144.5	144.5	143.5
72.5°	123.2	121.6	122.2	121.6
75°	94.6	92.0	92.0	92.5
77.5°	73.8	73.3	74.3	72.8
80°	57.7	57.2	56.7	58.2
82.5°	41.6	41.6	41.6	43.7
85°	27.0	26.0	27.0	26.0
87.5°	12.0	11.4	10.9	11.4
90°	0.0	0.0	0.0	0.0

(END OF REPORT)