

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: P242749

Luminaire Tested: **S124RDR-S1020D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242749  
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-S1020D840-X4F0-XX-UDD-A-W  
Description: DEFINE 4 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4040.0 lumens  
Efficiency: N/A  
Efficacy: 116.1 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

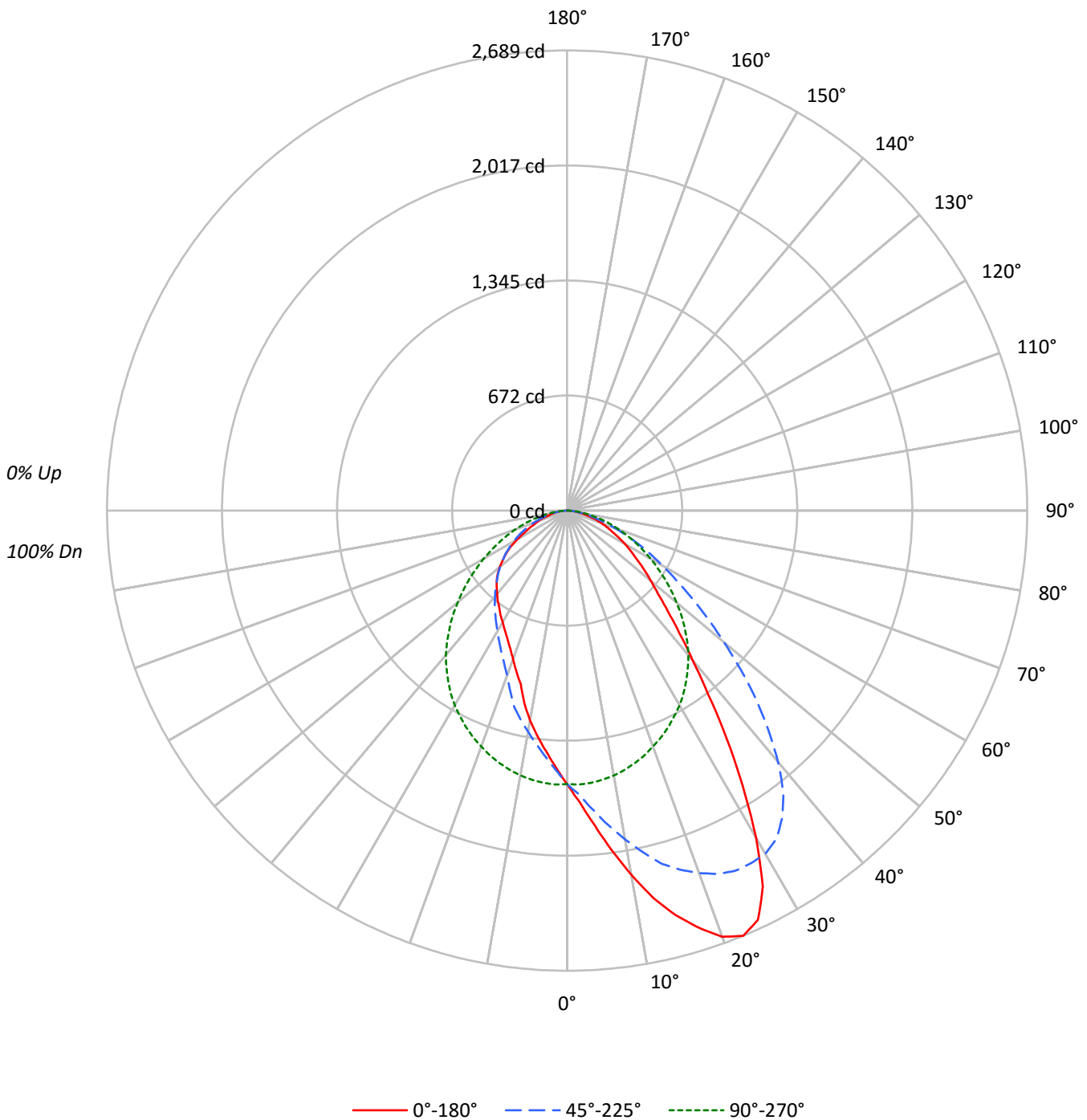
Input Watts (W): 34.8  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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°	14206	14206	14206
5°	16478	14249	12595
10°	19494	14187	11240
15°	22518	14056	9659
20°	25071	13875	8735
25°	25881	13699	8109
30°	22656	13483	7733
35°	17636	13164	7505
40°	13225	12799	7382
45°	10443	12215	7317
50°	8816	11540	7105
55°	7684	10797	6726
60°	6914	10028	5952
65°	6095	9196	5119
70°	5489	8335	4618
75°	4599	7387	3936
80°	3890	6296	3691
85°	3284	4926	3284



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CATALOG NUMBER: S124RDR-S1020D840-X4F0-XX-UDD-A-W

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	154.8	3.8
10°-20°	467.3	11.6
20°-30°	732.0	18.1
30°-40°	812.9	20.1
40°-50°	720.4	17.8
50°-60°	561.4	13.9
60°-70°	367.2	9.1
70°-80°	180.2	4.5
80°-90°	43.9	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°	1354.1	33.5
0°-40°	2167.0	53.6
0°-60°	3448.8	85.4
0°-90°	4040.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4040.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1598	1598	1598	1598	1598	
5°	1847	1758	1597	1445	1412	186
15°	2447	2136	1527	1190	1050	696
25°	2639	2323	1397	910	827	1178
35°	1625	2191	1213	732	692	1017
45°	831	1562	972	582	582	655
55°	496	884	697	438	434	450
65°	290	454	437	284	243	291
75°	134	173	215	138	115	147
85°	32	35	48	34	32	37
90°	0	0	0	0	0	



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CATALOG NUMBER: S124RDR-S1020D840-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2
2.5°	1707.7	1713.5	1707.7	1707.0	1700.6	1698.6	1696.1	1687.7	1672.2	1663.2	1665.2
5°	1846.7	1862.8	1853.8	1852.5	1838.4	1824.2	1815.2	1794.6	1772.7	1757.9	1745.7
7.5°	2001.3	2010.9	2004.5	1997.4	1973.0	1965.2	1944.0	1919.5	1882.8	1855.1	1830.0
10°	2159.7	2167.4	2164.8	2148.1	2131.4	2097.2	2077.9	2039.9	1990.3	1951.1	1914.4
12.5°	2315.5	2323.9	2296.2	2301.4	2265.9	2240.8	2207.3	2157.1	2097.9	2044.4	1996.1
15°	2446.9	2436.6	2436.6	2423.7	2388.3	2350.9	2319.4	2269.2	2197.0	2136.5	2072.8
17.5°	2555.1	2559.6	2554.4	2521.6	2495.8	2457.8	2401.2	2343.9	2281.4	2200.3	2137.2
20°	2650.4	2650.4	2644.6	2624.0	2587.9	2546.7	2484.2	2420.5	2335.5	2253.7	2180.3
22.5°	2689.0	2691.6	2684.5	2668.4	2636.8	2596.9	2546.0	2481.0	2392.8	2298.1	2202.8
25°	2638.8	2651.0	2652.3	2647.8	2638.1	2613.7	2567.9	2501.6	2423.1	2323.2	2225.4
27.5°	2476.5	2492.6	2499.0	2513.2	2539.6	2549.3	2543.5	2499.0	2423.1	2324.5	2227.3
30°	2207.3	2220.2	2262.1	2316.8	2359.3	2397.9	2431.4	2440.4	2401.8	2315.5	2211.8
32.5°	1908.6	1927.2	1969.1	2029.0	2106.9	2179.0	2264.7	2310.4	2318.7	2275.6	2181.6
35°	1625.2	1638.1	1676.8	1738.6	1823.6	1920.8	2039.9	2132.6	2195.8	2191.2	2132.6
37.5°	1353.5	1371.5	1410.8	1461.7	1545.4	1669.7	1782.4	1906.6	2020.0	2075.3	2045.7
40°	1139.7	1140.4	1178.4	1231.2	1308.4	1413.4	1539.0	1680.6	1810.7	1916.9	1937.5
42.5°	971.0	971.0	992.9	1050.9	1101.1	1198.3	1316.8	1457.2	1614.9	1741.8	1804.9
45°	830.7	836.4	857.1	891.2	935.0	1018.7	1114.6	1245.3	1416.0	1561.5	1652.3
47.5°	719.9	730.2	742.4	773.3	809.4	868.0	949.8	1072.1	1213.8	1375.4	1501.0
50°	637.5	638.8	655.5	671.0	701.2	745.7	815.2	913.1	1040.6	1194.5	1338.1
52.5°	566.6	566.0	574.4	595.0	618.2	650.4	703.2	790.1	899.5	1033.5	1182.9
55°	495.8	499.0	506.8	522.2	540.9	565.4	609.8	676.8	765.6	883.5	1018.0
57.5°	441.7	443.7	450.7	456.5	474.6	492.6	528.7	576.9	654.9	753.4	885.4
60°	388.9	389.6	391.5	401.2	414.7	431.4	454.0	493.2	556.3	644.6	743.7
62.5°	337.4	338.7	341.9	348.4	358.0	368.3	392.1	421.8	471.3	543.5	630.4
65°	289.8	290.4	294.9	297.5	305.9	316.2	333.5	354.8	390.9	454.0	521.6
67.5°	249.8	249.8	249.8	253.7	260.1	267.2	278.8	296.8	325.8	366.4	429.5
70°	211.2	211.2	212.5	214.4	217.6	223.4	229.2	242.1	262.1	293.6	339.3
72.5°	175.1	175.8	177.1	177.1	178.4	182.9	186.7	193.8	207.3	229.2	264.0
75°	133.9	135.9	139.1	141.7	144.9	144.2	148.7	153.9	158.4	172.6	193.8
77.5°	105.6	104.3	104.3	106.9	107.5	108.2	111.4	115.9	119.8	127.5	135.2
80°	76.0	76.0	77.9	78.6	77.9	78.6	81.8	83.7	85.0	87.6	94.7
82.5°	52.8	54.1	52.8	53.4	54.1	54.7	57.3	57.3	58.6	59.2	61.2
85°	32.2	32.8	33.5	32.2	32.2	32.2	33.5	34.1	35.4	34.8	36.1
87.5°	14.2	13.5	14.2	14.2	14.8	14.2	14.8	16.1	14.8	15.5	15.5
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: P242749

CATALOG NUMBER: S124RDR-S1020D840-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2
2.5°	1658.7	1649.7	1645.2	1634.9	1622.7	1616.2	1610.4	1602.1	1591.1	1579.5	1571.2
5°	1730.2	1714.7	1695.4	1672.2	1651.6	1631.7	1614.3	1596.9	1576.9	1556.3	1535.7
7.5°	1801.0	1773.3	1743.7	1708.3	1674.2	1642.6	1614.3	1586.6	1555.1	1526.7	1500.3
10°	1875.7	1834.5	1788.8	1740.5	1692.2	1650.4	1609.1	1571.8	1530.6	1493.9	1463.0
12.5°	1936.3	1886.0	1828.7	1765.6	1705.1	1652.3	1603.3	1551.8	1503.5	1463.0	1419.2
15°	2004.5	1938.2	1864.1	1792.0	1716.7	1647.8	1584.0	1527.4	1473.9	1417.9	1378.6
17.5°	2051.5	1974.9	1887.3	1803.6	1717.3	1637.5	1565.4	1499.7	1438.5	1382.5	1336.1
20°	2092.7	2005.8	1906.0	1807.5	1707.7	1620.7	1541.5	1466.8	1403.1	1341.3	1293.0
22.5°	2115.9	2017.4	1906.0	1801.7	1697.4	1601.4	1512.6	1434.0	1363.2	1301.4	1246.6
25°	2117.2	2014.2	1902.8	1784.3	1671.0	1571.2	1481.0	1396.7	1319.4	1257.6	1200.9
27.5°	2112.0	1992.9	1880.9	1760.5	1643.9	1537.7	1444.3	1354.8	1278.2	1212.5	1154.5
30°	2096.6	1966.5	1844.2	1718.0	1599.5	1498.4	1398.6	1313.6	1233.1	1164.2	1105.6
32.5°	2063.1	1934.3	1800.4	1670.3	1549.9	1444.9	1351.6	1265.9	1187.4	1116.5	1053.4
35°	2016.7	1886.0	1743.1	1610.4	1492.6	1384.4	1295.6	1213.1	1137.8	1062.5	996.8
37.5°	1963.3	1826.8	1685.8	1540.2	1423.1	1320.0	1237.0	1157.8	1084.4	1015.5	942.7
40°	1880.9	1759.2	1612.4	1468.1	1347.1	1248.6	1173.2	1103.0	1029.0	960.7	888.0
42.5°	1781.1	1681.9	1533.2	1388.3	1269.2	1175.1	1106.2	1038.0	972.3	906.6	830.0
45°	1667.7	1589.2	1450.1	1311.0	1190.6	1096.6	1032.2	971.7	912.4	849.3	777.8
47.5°	1541.5	1483.6	1362.5	1217.0	1104.3	1018.0	956.2	906.0	853.8	790.1	725.7
50°	1408.9	1374.8	1258.9	1128.8	1022.5	944.6	880.9	834.5	792.7	732.1	676.1
52.5°	1267.2	1253.1	1159.7	1036.7	935.0	859.0	806.8	766.3	723.8	676.1	624.6
55°	1123.0	1132.6	1049.6	942.0	845.5	781.1	731.5	696.7	660.7	618.2	577.6
57.5°	973.0	1009.7	947.8	850.6	757.2	696.7	658.7	627.8	597.6	561.5	524.8
60°	841.0	870.6	839.0	756.0	676.8	621.4	586.6	564.1	533.8	501.6	475.2
62.5°	712.2	744.4	728.9	665.8	593.7	548.0	518.4	497.7	477.1	450.1	422.4
65°	608.5	629.1	620.1	573.7	521.6	481.0	452.7	437.2	416.6	396.0	371.5
67.5°	486.8	527.4	520.9	495.2	444.9	412.7	392.8	378.6	359.3	343.9	326.5
70°	383.1	419.8	419.2	399.2	374.8	345.1	332.3	320.7	303.9	289.1	275.6
72.5°	296.2	329.0	335.5	321.3	306.5	285.9	273.7	266.6	250.5	241.5	231.2
75°	219.6	244.0	250.5	250.5	242.8	231.2	220.2	215.1	203.5	194.5	188.0
77.5°	154.5	171.3	180.9	182.9	183.5	179.0	168.7	164.8	155.8	152.6	145.5
80°	101.7	112.0	123.6	127.5	130.7	129.4	125.6	123.0	114.6	111.4	108.8
82.5°	62.5	67.0	76.0	85.6	83.7	88.2	85.0	83.1	77.3	76.6	74.1
85°	36.7	37.3	38.6	44.4	47.6	48.9	49.6	48.3	46.4	46.4	41.9
87.5°	15.5	14.8	16.1	16.1	16.7	19.3	21.2	21.9	20.0	18.0	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



TEST NUMBER: P242749

CATALOG NUMBER: S124RDR-S1020D840-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2	1598.2
2.5°	1562.1	1555.7	1547.3	1537.7	1526.1	1515.8	1511.3	1515.1	1517.1	1511.9	1511.3
5°	1521.6	1505.5	1492.6	1473.3	1457.8	1444.9	1435.9	1432.1	1433.4	1423.1	1420.5
7.5°	1476.5	1459.1	1437.9	1416.0	1395.4	1377.3	1367.7	1363.2	1352.2	1347.7	1340.6
10°	1433.4	1407.6	1387.0	1359.9	1335.5	1312.9	1302.0	1293.0	1282.0	1276.9	1265.9
12.5°	1388.9	1358.0	1334.8	1306.5	1281.4	1253.1	1242.8	1224.1	1205.4	1193.2	1178.4
15°	1347.7	1311.7	1284.0	1250.5	1220.9	1190.0	1162.3	1131.4	1119.8	1095.3	1081.1
17.5°	1298.8	1261.4	1230.5	1187.4	1142.9	1105.6	1074.7	1042.5	1025.1	1008.4	1001.3
20°	1250.5	1217.0	1169.4	1117.2	1066.3	1023.8	1000.0	980.7	961.4	950.4	942.7
22.5°	1204.8	1159.7	1102.4	1045.1	994.2	963.3	944.0	924.0	909.2	898.9	888.0
25°	1152.6	1096.6	1038.0	973.6	938.8	909.9	888.0	871.9	862.2	848.7	843.5
27.5°	1101.7	1034.1	967.8	924.0	888.0	860.3	840.3	828.7	815.8	806.8	799.7
30°	1041.2	972.3	914.4	873.1	836.4	814.6	799.1	784.9	775.3	768.2	763.0
32.5°	981.3	912.4	866.1	821.0	793.9	772.7	756.0	746.3	739.2	729.6	727.0
35°	924.0	862.8	820.3	780.4	750.8	731.5	718.6	707.7	701.2	698.6	696.7
37.5°	868.0	817.1	770.1	737.9	710.2	695.4	678.7	673.5	669.0	663.2	665.8
40°	815.2	768.2	727.6	692.9	671.6	654.9	645.8	639.4	635.5	635.5	635.5
42.5°	769.5	723.8	684.5	654.2	633.0	619.4	609.1	604.0	603.3	602.7	606.6
45°	721.8	679.3	639.4	613.7	595.6	581.5	575.7	571.2	571.2	573.7	574.4
47.5°	674.2	634.3	602.1	572.4	555.7	546.7	541.5	539.0	539.0	542.2	544.8
50°	631.0	591.8	560.2	534.4	519.0	510.6	506.1	504.8	506.1	506.1	510.6
52.5°	584.0	549.9	519.0	498.4	480.4	472.6	470.7	468.8	469.4	472.0	473.3
55°	538.3	506.8	477.1	456.5	443.7	438.5	432.7	433.4	432.1	433.4	433.4
57.5°	492.0	464.3	435.3	418.5	407.6	399.9	393.4	395.4	393.4	393.4	392.8
60°	447.5	416.6	394.7	379.9	367.0	360.6	354.8	356.1	354.2	352.9	350.3
62.5°	399.2	374.8	354.2	340.0	330.3	322.6	316.8	314.9	309.7	304.6	298.1
65°	352.9	331.6	312.9	299.4	289.8	284.0	279.5	275.6	265.9	255.6	250.5
67.5°	307.1	291.7	273.7	262.1	254.3	246.6	238.2	231.2	221.5	215.1	211.8
70°	263.4	248.6	233.7	222.8	214.4	207.3	197.7	193.2	186.7	184.2	180.9
72.5°	221.5	208.0	194.5	184.8	175.8	170.6	163.6	159.0	157.1	156.5	153.3
75°	179.0	168.1	157.8	148.7	141.7	137.8	134.6	131.4	130.1	124.3	121.1
77.5°	137.8	130.1	123.6	116.5	112.0	109.5	102.4	97.9	95.3	92.1	91.4
80°	101.7	96.6	90.1	86.3	79.2	76.6	74.1	73.4	72.8	72.1	71.5
82.5°	70.2	65.0	58.6	56.7	56.0	54.7	53.4	52.8	52.2	52.8	52.8
85°	38.6	36.1	36.1	35.4	34.8	34.1	33.5	33.5	32.8	33.5	32.8
87.5°	16.1	15.5	15.5	14.2	14.8	14.8	14.2	14.2	14.8	13.5	13.5
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: P242749

CATALOG NUMBER: S124RDR-S1020D840-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	1598.2	1598.2	1598.2	1598.2
2.5°	1507.4	1508.7	1504.2	1502.9
5°	1415.3	1414.0	1410.8	1411.5
7.5°	1335.5	1331.0	1334.2	1329.0
10°	1263.4	1256.3	1250.5	1245.3
12.5°	1164.8	1159.0	1150.7	1153.9
15°	1072.8	1063.1	1047.7	1049.6
17.5°	990.3	991.6	982.6	985.2
20°	929.2	924.7	925.3	923.4
22.5°	886.7	880.9	875.1	870.6
25°	837.7	833.9	828.1	826.8
27.5°	794.6	793.9	791.4	788.2
30°	757.9	756.6	755.3	753.4
32.5°	725.0	724.4	723.1	723.8
35°	694.1	693.5	692.2	691.6
37.5°	665.2	667.1	665.8	665.8
40°	634.9	635.5	636.8	636.2
42.5°	609.8	609.8	611.7	609.1
45°	578.9	582.7	582.1	582.1
47.5°	546.0	550.5	551.2	551.2
50°	513.8	512.6	514.5	513.8
52.5°	474.6	475.2	474.6	473.9
55°	434.0	434.6	433.4	434.0
57.5°	390.9	388.3	390.2	388.9
60°	343.9	338.7	337.4	334.8
62.5°	291.0	287.8	282.7	285.9
65°	245.3	242.8	240.8	243.4
67.5°	208.6	207.3	207.3	206.1
70°	180.9	179.0	179.0	177.7
72.5°	152.6	150.7	151.3	150.7
75°	117.2	114.0	114.0	114.6
77.5°	91.4	90.8	92.1	90.1
80°	71.5	70.8	70.2	72.1
82.5°	51.5	51.5	51.5	54.1
85°	33.5	32.2	33.5	32.2
87.5°	14.8	14.2	13.5	14.2
90°	0.0	0.0	0.0	0.0

(END OF REPORT)