

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: P332642-830

Luminaire Tested: **S124DIP-S1020D590U830-4F0-1E-UDD-F4**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P332642-830  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1807-864-18,  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S124DIP-S1020D590U830-4F0-1E-UDD-F4  
Description: DEFINE 4 DIRECT-INDIRECT PENDANT LED LUMINAIRE  
DOWNLIGHT 1020 LUMENS PER FOOT, FLUSH SATIN WHITE DIFFUSER  
UPLIGHT 590 LUMENS PER FOOT, BATWING OPTIC  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6165.4 lumens  
Efficiency: N/A  
Efficacy: 126.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.17 / 1.3  
Luminous Opening: Rectangular (W 0.33' x L: 4' x H: 0')  
CIE Type: Semi-Direct

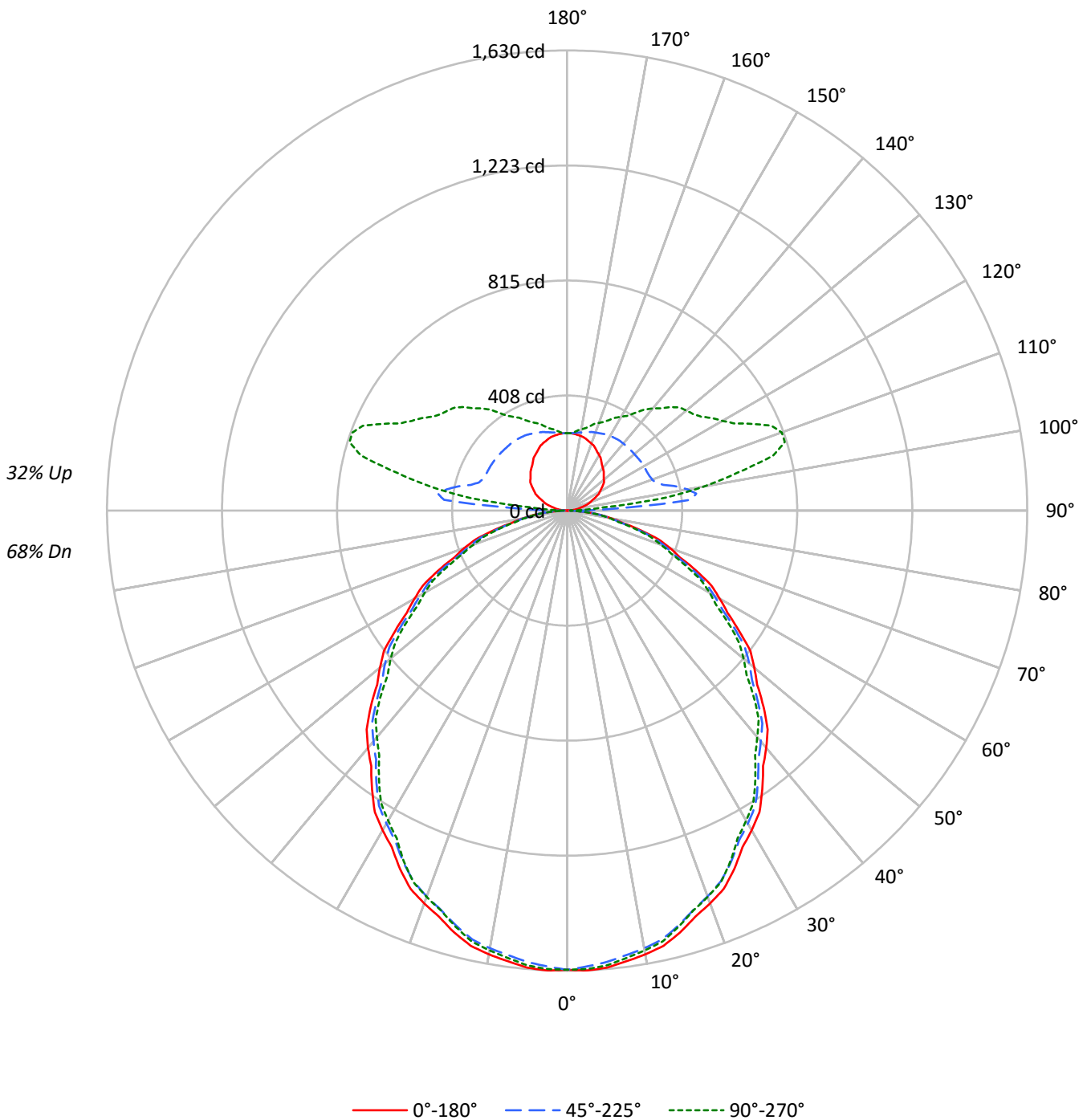
Input Watts (W): 48.8  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	111	111	111	111	105	105	105	105	93	93	93		82	82	82		72	72	72	68
1	102	97	93	90	96	92	88	85	82	79	77		72	70	69		64	62	61	57
2	93	85	79	73	87	80	75	70	72	67	63		64	60	57		56	54	51	48
3	85	75	67	61	79	71	64	58	63	58	53		56	52	48		50	47	44	40
4	77	66	58	52	73	63	55	50	56	50	46		50	45	42		45	41	38	35
5	71	59	51	44	67	56	48	43	50	44	39		45	40	36		40	36	33	30
6	66	53	45	39	62	50	43	37	46	39	34		41	36	32		36	32	29	26
7	61	48	40	34	57	46	38	33	41	35	30		37	32	28		33	29	26	23
8	56	44	36	30	53	42	34	29	38	32	27		34	29	25		31	26	23	21
9	53	40	32	27	50	38	31	26	35	29	24		31	26	23		28	24	21	19
10	49	37	29	24	47	35	28	24	32	26	22		29	24	21		26	22	19	17

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	13130	13130	13130
5°	13169	13011	13105
10°	13086	12904	12969
15°	12929	12721	12754
20°	12718	12494	12506
25°	12479	12235	12200
30°	12185	11929	11820
35°	11880	11610	11456
40°	11564	11248	11041
45°	11233	10891	10683
50°	10868	10574	10246
55°	10473	10162	9831
60°	10078	9700	9405
65°	9635	9259	8886
70°	9135	8674	8337
75°	8372	7966	7764
80°	7452	7146	6969
85°	6521	6280	6150



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	153.2	2.5
10°-20°	431.5	7.0
20°-30°	635.2	10.3
30°-40°	738.4	12.0
40°-50°	738.4	12.0
50°-60°	645.9	10.5
60°-70°	479.7	7.8
70°-80°	272.5	4.4
80°-90°	80.2	1.3
90°-100°	197.7	3.2
100°-110°	411.4	6.7
110°-120°	368.5	6.0
120°-130°	310.0	5.0
130°-140°	258.4	4.2
140°-150°	197.4	3.2
150°-160°	138.8	2.3
160°-170°	81.6	1.3
170°-180°	26.6	0.4
0°-30°	1219.8	19.8
0°-40°	1958.2	31.8
0°-60°	3342.6	54.2
0°-90°	4175.0	67.7
90°-120°	977.6	15.9
90°-150°	1743.4	28.3
90°-180°	1990.0	32.3
0°-180°	6165.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1626	1626	1626	1626	1626	
5°	1625	1619	1606	1619	1617	154
15°	1547	1541	1522	1529	1526	436
25°	1401	1391	1374	1374	1370	644
35°	1205	1196	1178	1169	1162	753
45°	984	974	954	940	936	758
55°	744	739	722	707	698	666
65°	504	497	485	472	465	499
75°	268	262	255	250	249	285
85°	70	70	68	68	66	77
90°	1	4	10	11	11	5
95°	18	56	438	217	131	20
105°	63	91	353	760	756	67
115°	111	139	314	604	726	110
125°	154	183	313	514	580	137
135°	183	218	310	456	518	142
145°	211	242	309	385	423	133
155°	240	259	300	340	354	111
165°	262	270	288	305	309	74
175°	273	274	276	280	278	26
180°	274	274	274	274	274	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1626.4	1626.4	1626.4	1626.4	1626.4	1626.4	1626.4	1626.4	1626.4	1626.4	1626.4
2.5°	1630.5	1629.8	1629.1	1628.4	1627.8	1626.1	1623.5	1621.0	1618.4	1615.9	1618.3
5°	1625.0	1623.9	1622.8	1621.6	1620.4	1618.3	1615.0	1611.8	1608.7	1605.5	1608.7
7.5°	1610.0	1608.7	1607.6	1606.5	1605.3	1603.0	1599.4	1595.9	1592.3	1588.8	1591.4
10°	1596.4	1595.3	1594.0	1592.9	1591.8	1589.3	1585.5	1581.8	1578.0	1574.2	1576.5
12.5°	1578.7	1577.5	1576.3	1575.2	1574.0	1571.4	1567.4	1563.5	1559.4	1555.5	1558.0
15°	1546.9	1545.7	1544.5	1543.4	1542.2	1539.5	1535.1	1530.8	1526.4	1522.1	1523.8
17.5°	1508.5	1507.1	1505.6	1504.2	1502.8	1500.0	1495.8	1491.8	1487.6	1483.6	1484.6
20°	1480.4	1478.9	1477.5	1476.0	1474.6	1471.7	1467.4	1463.0	1458.7	1454.3	1455.2
22.5°	1450.2	1448.2	1446.3	1444.4	1442.6	1439.4	1435.0	1430.7	1426.3	1422.0	1423.6
25°	1400.9	1398.9	1396.8	1394.8	1392.8	1389.8	1385.7	1381.7	1377.6	1373.6	1373.9
27.5°	1344.6	1342.6	1340.4	1338.3	1336.2	1333.3	1329.6	1325.8	1322.0	1318.2	1317.6
30°	1307.1	1304.8	1302.4	1300.1	1297.8	1294.8	1291.0	1287.2	1283.5	1279.7	1278.6
32.5°	1267.4	1265.4	1263.3	1261.2	1259.1	1256.0	1252.1	1248.1	1244.1	1240.1	1238.7
35°	1205.4	1203.4	1201.4	1199.4	1197.3	1194.3	1190.2	1186.2	1182.1	1178.1	1176.0
37.5°	1140.0	1138.1	1136.3	1134.4	1132.6	1129.5	1125.1	1120.8	1116.4	1112.1	1109.9
40°	1097.3	1095.0	1092.6	1090.3	1088.0	1084.7	1080.3	1076.0	1071.7	1067.3	1064.4
42.5°	1051.4	1050.0	1048.6	1047.3	1045.8	1042.7	1037.9	1033.1	1028.3	1023.5	1020.1
45°	983.9	981.8	979.9	977.8	975.8	972.4	967.8	963.2	958.6	953.9	950.7
47.5°	913.2	911.9	910.5	909.1	907.7	904.8	900.6	896.3	892.0	887.7	884.1
50°	865.3	864.1	863.0	861.9	860.6	858.1	854.0	850.0	845.9	841.9	837.8
52.5°	818.4	817.0	815.6	814.3	812.8	810.0	805.7	801.4	797.1	792.9	789.3
55°	744.1	743.2	742.3	741.5	740.6	738.2	734.1	730.1	726.0	722.0	718.5
57.5°	673.3	672.2	671.3	670.2	669.3	666.8	662.8	658.8	654.8	650.8	647.5
60°	624.2	622.7	621.3	619.9	618.4	615.9	612.1	608.3	604.5	600.8	598.1
62.5°	576.3	575.0	573.8	572.6	571.4	568.8	564.8	560.8	556.8	552.8	550.4
65°	504.4	502.8	501.4	500.0	498.5	496.3	493.4	490.6	487.7	484.7	481.9
67.5°	431.9	430.6	429.2	427.9	426.5	424.5	421.7	419.0	416.1	413.4	410.6
70°	387.0	385.0	383.0	381.0	378.9	376.7	374.5	372.1	369.9	367.5	365.1
72.5°	339.1	337.1	335.1	333.0	331.0	329.0	327.2	325.4	323.5	321.6	319.8
75°	268.4	267.0	265.5	264.1	262.7	261.2	259.8	258.4	256.8	255.4	254.3
77.5°	201.0	200.3	199.6	199.1	198.4	197.5	196.1	194.9	193.6	192.4	192.0
80°	160.3	159.4	158.5	157.7	156.8	156.1	155.5	155.0	154.4	153.7	153.2
82.5°	120.6	120.3	119.9	119.4	119.0	118.8	118.7	118.6	118.5	118.3	118.0
85°	70.4	70.4	70.4	70.4	70.4	70.1	69.5	68.9	68.3	67.8	67.8
87.5°	27.2	27.2	27.3	27.1	27.1	26.8	27.2	27.0	27.0	27.0	26.9
90°	0.6	1.6	3.2	3.8	4.3	4.3	7.5	7.5	8.6	9.7	9.1
92.5°	6.1	9.0	13.9	20.5	28.4	39.6	66.9	108.6	149.3	170.5	142.0
95°	17.7	19.3	24.7	31.8	44.6	67.2	114.0	202.2	330.6	438.2	450.5
97.5°	31.9	31.9	36.5	42.9	54.0	73.0	109.0	181.7	309.5	461.6	566.1
100°	40.9	40.9	44.6	51.1	61.3	78.5	110.2	171.0	280.7	432.3	570.0
102.5°	49.5	50.3	53.6	59.7	69.5	85.8	114.5	168.0	261.3	395.8	537.6
105°	62.9	64.6	67.2	73.7	83.3	99.0	124.7	169.4	244.7	352.7	479.1
107.5°	77.8	78.8	81.5	88.4	97.6	113.0	136.7	177.3	241.7	328.7	431.8
110°	87.7	88.7	91.4	97.8	107.5	122.1	145.7	183.3	242.5	320.5	408.1



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	97.1	98.2	101.3	107.4	117.0	131.5	154.3	189.8	245.1	316.6	394.7
115°	110.7	112.4	116.1	121.5	131.8	146.3	167.8	200.0	250.1	314.5	382.3
117.5°	125.0	126.5	129.8	135.7	145.2	160.3	180.8	210.5	255.2	314.0	376.7
120°	134.4	135.5	139.2	145.2	154.3	169.4	189.8	217.7	259.2	314.0	373.7
122.5°	143.0	144.1	147.9	153.4	163.3	178.0	198.4	224.6	263.1	313.6	370.2
125°	154.3	156.5	159.7	165.6	175.8	190.9	210.2	235.0	268.8	312.9	364.6
127.5°	164.3	166.1	169.9	176.6	187.3	202.5	221.2	243.9	273.4	311.7	356.9
130°	169.9	172.0	176.3	184.5	194.6	210.2	228.5	249.5	276.9	311.3	352.1
132.5°	175.5	177.2	182.9	190.5	201.5	216.2	234.5	255.1	279.9	310.9	347.9
135°	183.3	185.5	190.9	200.0	211.3	225.3	243.0	262.4	284.5	310.2	341.4
137.5°	191.2	193.2	199.2	207.8	219.6	232.9	249.5	267.6	287.1	310.1	335.8
140°	196.8	198.4	204.3	213.5	224.7	237.6	253.8	271.0	289.3	309.7	332.8
142.5°	202.8	204.4	209.9	218.6	229.5	242.0	257.7	273.5	291.0	309.7	330.3
145°	211.3	212.9	218.3	225.8	236.0	247.9	261.8	276.4	292.0	308.6	325.8
147.5°	220.8	221.4	226.1	233.8	242.4	253.1	266.2	278.8	292.5	306.7	321.9
150°	226.9	227.4	231.8	238.2	246.3	256.5	268.3	280.1	292.5	305.4	318.9
152.5°	232.5	232.6	236.9	242.9	250.2	259.5	270.0	281.0	291.6	303.2	315.4
155°	240.3	240.9	244.1	249.5	255.4	263.4	272.6	281.7	290.3	300.0	310.2
157.5°	248.0	248.0	251.0	255.1	260.3	266.6	274.5	281.7	289.0	296.7	305.0
160°	252.7	252.7	254.9	258.6	262.9	268.8	275.3	281.7	287.7	294.1	301.1
162.5°	257.0	256.6	258.3	261.6	265.5	270.1	276.2	281.7	286.3	291.5	297.7
165°	261.8	261.8	262.9	265.6	268.3	271.5	276.4	280.7	283.9	287.7	292.0
167.5°	266.6	266.2	266.6	268.7	270.2	272.7	276.3	279.4	281.3	283.8	286.8
170°	268.8	268.3	268.8	270.4	271.5	273.1	275.8	278.5	279.6	281.2	283.3
172.5°	271.0	270.4	270.5	271.7	272.4	273.5	275.4	277.7	277.9	278.6	280.3
175°	273.1	272.6	272.6	273.1	273.7	273.7	274.8	276.4	275.8	275.8	276.9
177.5°	274.1	273.7	273.2	273.7	273.7	273.7	274.1	274.9	274.1	274.1	274.6
180°	273.7	273.7	273.7	273.7	273.7	273.7	273.7	273.7	273.7	273.7	273.7



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1626.4	1626.4	1626.4	1626.4	1626.4	1626.4	1626.4	1626.4
2.5°	1620.5	1622.9	1625.2	1626.3	1626.0	1625.8	1625.5	1625.3
5°	1611.8	1615.0	1618.3	1619.6	1619.0	1618.3	1617.8	1617.2
7.5°	1593.9	1596.5	1599.0	1600.2	1599.8	1599.4	1599.0	1598.7
10°	1578.9	1581.2	1583.5	1584.3	1583.8	1583.2	1582.6	1582.1
12.5°	1560.6	1563.1	1565.7	1566.5	1565.8	1564.9	1564.1	1563.3
15°	1525.6	1527.3	1529.1	1529.5	1528.6	1527.8	1526.9	1526.0
17.5°	1485.7	1486.9	1487.9	1488.2	1487.6	1487.0	1486.5	1485.8
20°	1456.0	1457.0	1457.8	1457.9	1457.4	1456.8	1456.2	1455.7
22.5°	1425.1	1426.7	1428.2	1428.5	1427.5	1426.4	1425.4	1424.4
25°	1374.1	1374.4	1374.7	1374.2	1373.1	1372.0	1370.7	1369.6
27.5°	1316.9	1316.2	1315.5	1314.5	1313.0	1311.5	1310.0	1308.6
30°	1277.4	1276.2	1275.1	1273.8	1272.3	1270.8	1269.4	1268.0
32.5°	1237.3	1236.0	1234.5	1233.1	1231.6	1230.2	1228.8	1227.3
35°	1174.0	1172.0	1170.0	1168.2	1166.8	1165.4	1163.9	1162.4
37.5°	1107.7	1105.5	1103.3	1101.3	1099.4	1097.4	1095.5	1093.6
40°	1061.5	1058.6	1055.7	1053.6	1052.1	1050.7	1049.2	1047.7
42.5°	1016.8	1013.4	1010.0	1007.9	1006.9	1005.9	1004.9	1004.0
45°	947.5	944.3	941.1	939.1	938.3	937.5	936.5	935.7
47.5°	880.5	876.9	873.4	870.4	868.3	866.0	863.8	861.7
50°	833.8	829.7	825.7	822.7	821.0	819.3	817.6	815.8
52.5°	785.7	782.0	778.4	775.6	773.4	771.2	769.0	766.8
55°	715.0	711.5	708.0	705.5	703.7	702.0	700.2	698.5
57.5°	644.2	640.9	637.6	635.1	633.4	631.8	630.1	628.4
60°	595.6	593.0	590.3	588.3	586.8	585.4	584.0	582.5
62.5°	548.1	545.6	543.3	541.4	540.0	538.5	537.1	535.6
65°	479.0	476.1	473.2	471.0	469.6	468.2	466.7	465.2
67.5°	407.8	405.0	402.3	400.7	400.2	399.8	399.4	399.1
70°	362.9	360.5	358.3	356.7	355.8	354.9	354.0	353.2
72.5°	317.9	316.0	314.2	312.8	312.0	311.1	310.3	309.3
75°	253.1	251.9	250.8	250.1	249.8	249.5	249.2	248.9
77.5°	191.6	191.3	191.0	190.4	189.6	188.9	188.1	187.4
80°	152.6	152.0	151.5	151.0	150.7	150.4	150.1	149.9
82.5°	117.6	117.3	117.0	116.6	116.3	116.0	115.7	115.5
85°	67.8	67.8	67.8	67.6	67.3	67.0	66.7	66.4
87.5°	27.0	27.1	27.1	27.1	27.2	27.4	27.2	27.2
90°	9.7	10.2	10.7	10.7	11.3	11.8	11.3	11.3
92.5°	105.6	79.5	63.2	52.5	46.1	43.3	41.4	41.4
95°	398.4	315.1	243.0	190.9	164.6	147.9	138.2	131.2
97.5°	588.6	557.7	505.1	448.9	410.4	378.0	361.8	350.6
100°	648.5	659.2	632.8	593.0	546.3	513.5	497.4	493.0
102.5°	645.5	698.8	706.4	689.8	661.1	637.3	620.4	616.9
105°	602.2	695.2	748.5	770.5	771.6	767.2	759.7	756.5
107.5°	540.8	639.8	714.8	762.7	789.3	801.5	806.9	808.3
110°	503.8	596.8	674.8	734.0	772.1	794.7	804.4	809.2





TEST NUMBER: P332642-830

CATALOG NUMBER: S124DIP-S1020D590U830-4F0-1E-UDD-F4

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	476.7	558.9	632.6	691.7	735.1	762.4	776.0	783.8
115°	449.5	515.7	578.5	630.2	672.6	704.9	722.1	726.4
117.5°	436.1	490.9	540.4	584.1	620.4	647.4	664.9	668.3
120°	430.2	480.1	523.1	561.3	592.0	615.7	629.6	635.6
122.5°	425.0	473.3	512.4	545.8	571.7	592.0	603.8	609.7
125°	416.1	462.4	499.5	529.0	550.5	566.2	576.4	579.6
127.5°	405.4	449.6	486.6	514.6	536.3	550.2	558.7	561.9
130°	396.8	439.3	475.8	504.4	526.4	539.8	548.5	551.7
132.5°	387.8	427.6	463.4	491.8	513.5	528.7	536.8	540.1
135°	375.3	410.3	443.0	470.0	491.4	506.5	515.1	518.3
137.5°	364.0	393.6	421.2	445.5	465.6	480.5	487.6	491.4
140°	357.5	382.9	407.0	429.6	448.5	460.2	467.8	472.1
142.5°	351.6	373.8	394.5	414.2	430.7	441.8	448.5	451.4
145°	343.0	361.3	377.5	392.5	406.0	415.1	420.5	423.1
147.5°	336.0	350.5	363.4	375.3	385.2	393.0	397.1	398.1
150°	331.8	344.1	354.9	364.6	373.2	380.1	383.3	383.9
152.5°	327.0	337.6	347.5	355.5	362.8	368.5	370.4	371.0
155°	319.9	328.5	336.6	343.0	348.5	352.7	354.3	354.3
157.5°	312.3	319.5	326.2	331.4	335.5	338.7	339.7	339.7
160°	307.6	313.5	319.3	323.7	326.9	330.2	330.6	330.6
162.5°	302.8	307.8	312.5	316.4	318.8	322.0	322.5	322.1
165°	296.2	299.4	303.2	305.9	308.1	310.2	309.7	309.2
167.5°	289.9	292.4	295.4	297.0	298.1	299.4	299.4	299.0
170°	286.1	287.7	289.8	291.4	292.5	293.0	292.5	292.5
172.5°	282.6	283.8	285.1	286.3	286.9	287.5	286.9	286.1
175°	278.0	278.5	279.6	279.6	279.6	280.7	279.6	278.5
177.5°	274.9	275.4	275.4	275.8	275.4	275.8	274.9	274.1
180°	273.7	273.7	273.7	273.7	273.7	273.7	273.7	273.7

(END OF REPORT)