

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: P332230-840

Luminaire Tested: **S123DIW-S1165D1320U840-4F0-1E-UDD-D**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P332230-840  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1807-864-5,  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S123DIW-S1165D1320U840-4F0-1E-UDD-D  
Description: DEFINE 3 DIRECT-INDIRECT WALL MOUNT LED LUMINAIRE  
DOWNLIGHT 1165 LUMENS PER FOOT, DROP SATIN WHITE DIFFUSER  
UPLIGHT 1320 LUMENS PER FOOT, NO LENS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

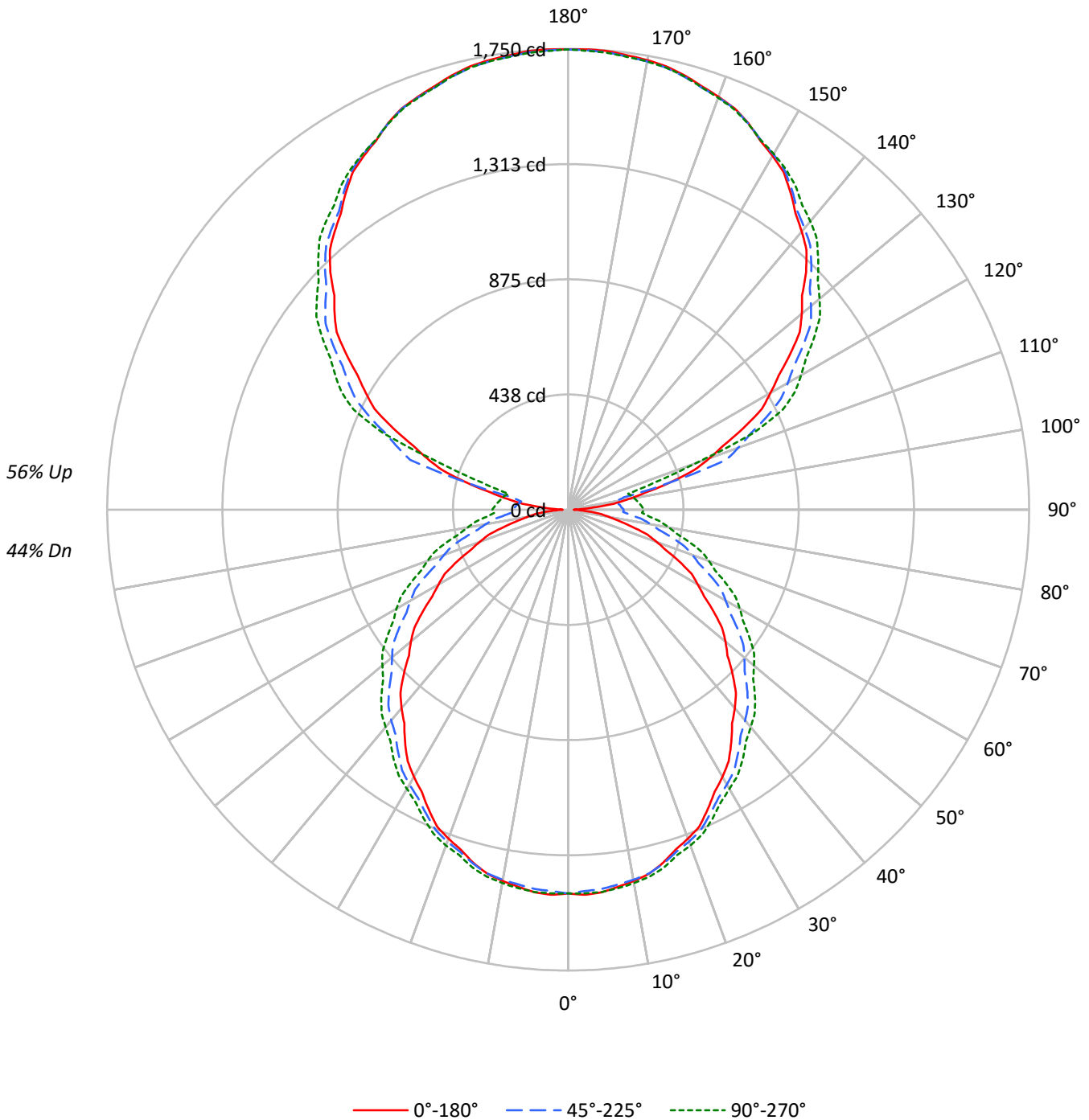
Lumens per Lamp: N/A  
Luminaire Lumens: 10231.8 lumens  
Efficiency: N/A  
Efficacy: 134.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.26 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.25' x L: 4' x H: 0.08')  
CIE Type: General Diffuse  
  
Input Watts (W): 76.2  
Input Voltage (V): 120  
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	106	106	106	106	97	97	97	97	80	80	80	65	65	65	51	51	51	44
1	95	91	87	83	87	83	79	76	69	66	64	55	54	52	43	42	41	35
2	87	79	72	67	79	72	67	62	60	55	52	48	45	43	37	35	34	29
3	79	69	61	55	72	63	56	51	52	47	43	42	39	36	33	30	28	24
4	72	61	53	46	65	56	49	43	46	41	37	37	33	30	29	26	24	20
5	66	54	46	40	60	50	42	37	41	36	31	33	29	26	26	23	21	17
6	61	48	40	34	55	44	37	32	37	31	27	30	26	23	24	21	18	15
7	56	43	35	30	51	40	33	28	33	28	24	27	23	20	22	18	16	13
8	52	39	32	26	47	36	29	24	30	25	21	25	21	18	20	17	14	12
9	48	36	28	23	44	33	26	22	28	23	19	23	19	16	18	15	13	11
10	45	33	26	21	41	30	24	19	26	20	17	21	17	14	17	14	12	10

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

	0°	45°	90°
0°	15685	15685	15685
5°	15735	15290	15299
10°	15593	14937	14863
15°	15393	14539	14387
20°	15105	14082	13865
25°	14751	13556	13315
30°	14388	13084	12757
35°	13980	12583	12311
40°	13592	12128	11834
45°	13161	11692	11453
50°	12735	11259	11034
55°	12267	10818	10657
60°	11808	10368	10270
65°	11339	9889	9809
70°	10633	9352	9336
75°	9740	8736	8855
80°	8709	8132	8306
85°	7760	7716	7988



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	138.1	1.4
10°-20°	393.8	3.8
20°-30°	589.0	5.8
30°-40°	703.4	6.9
40°-50°	735.9	7.2
50°-60°	690.6	6.7
60°-70°	576.8	5.6
70°-80°	412.7	4.0
80°-90°	251.0	2.5
90°-100°	218.0	2.1
100°-110°	416.3	4.1
110°-120°	803.2	7.9
120°-130°	969.6	9.5
130°-140°	1009.2	9.9
140°-150°	929.7	9.1
150°-160°	746.6	7.3
160°-170°	481.8	4.7
170°-180°	166.1	1.6
0°-30°	1120.9	11.0
0°-40°	1824.3	17.8
0°-60°	3250.8	31.8
0°-90°	4491.3	43.9
90°-120°	1437.5	14.0
90°-150°	4346.0	42.5
90°-180°	5741.0	56.1
0°-180°	10231.8	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1457	1457	1457	1457	1457	
5°	1459	1455	1446	1458	1457	138
15°	1389	1393	1392	1407	1406	391
25°	1254	1269	1275	1294	1295	578
35°	1079	1105	1126	1148	1156	675
45°	883	921	960	990	1003	680
55°	673	726	783	824	838	602
65°	465	528	597	643	660	459
75°	252	327	406	457	478	270
85°	78	157	241	293	311	82
90°	22	113	211	268	288	18
95°	97	110	197	253	272	111
105°	400	446	403	229	235	423
115°	734	763	830	879	898	724
125°	1028	1041	1090	1124	1139	918
135°	1277	1284	1306	1337	1342	983
145°	1472	1479	1482	1496	1503	920
155°	1619	1617	1618	1624	1617	746
165°	1708	1704	1702	1712	1704	482
175°	1748	1742	1743	1751	1741	166
180°	1748	1748	1748	1748	1748	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2
2.5°	1463.6	1462.8	1461.9	1461.1	1460.2	1458.6	1456.4	1454.1	1451.9	1449.7	1451.9
5°	1458.9	1458.1	1457.4	1456.7	1456.0	1454.6	1452.5	1450.4	1448.2	1446.1	1449.0
7.5°	1444.5	1444.7	1444.8	1445.0	1445.1	1444.2	1442.1	1440.1	1438.0	1435.9	1439.5
10°	1431.9	1432.6	1433.3	1434.0	1434.7	1434.1	1432.4	1430.6	1428.9	1427.0	1430.6
12.5°	1416.6	1417.5	1418.6	1419.6	1420.6	1420.5	1419.3	1418.1	1416.8	1415.6	1418.9
15°	1389.0	1390.1	1391.1	1392.2	1393.2	1393.6	1393.2	1392.9	1392.5	1392.2	1395.7
17.5°	1354.0	1356.1	1358.3	1360.4	1362.5	1363.5	1363.4	1363.2	1363.1	1362.9	1366.1
20°	1328.7	1330.8	1332.9	1335.0	1337.2	1338.6	1339.3	1340.0	1340.7	1341.4	1344.5
22.5°	1302.0	1304.1	1306.3	1308.4	1310.5	1312.0	1313.0	1314.0	1314.9	1316.0	1320.0
25°	1254.1	1257.6	1261.1	1264.7	1268.2	1270.4	1271.5	1272.5	1273.6	1274.7	1279.3
27.5°	1205.8	1209.8	1213.9	1217.9	1221.8	1225.1	1227.3	1229.5	1231.8	1234.1	1238.0
30°	1171.5	1176.1	1180.6	1185.3	1189.8	1193.6	1196.4	1199.2	1202.0	1204.9	1209.1
32.5°	1133.4	1138.5	1143.7	1148.8	1154.0	1158.4	1162.1	1165.8	1169.4	1173.1	1177.6
35°	1079.4	1085.1	1090.8	1096.4	1102.1	1107.1	1111.8	1116.3	1120.8	1125.5	1130.7
37.5°	1022.3	1028.6	1035.0	1041.4	1047.7	1053.7	1059.3	1065.0	1070.7	1076.3	1082.3
40°	984.2	990.6	996.9	1003.2	1009.6	1016.3	1023.4	1030.4	1037.4	1044.5	1050.6
42.5°	942.3	950.1	957.9	965.5	973.3	980.9	988.3	995.5	1002.9	1010.3	1016.8
45°	882.6	891.1	899.5	908.0	916.5	925.1	933.9	942.7	951.6	960.4	967.0
47.5°	820.0	829.6	839.2	848.9	858.5	868.3	878.4	888.5	898.6	908.7	916.1
50°	779.4	789.3	799.2	809.0	818.9	829.3	840.3	851.2	862.1	873.0	881.2
52.5°	736.3	746.7	757.1	767.6	778.0	789.3	801.3	813.3	825.5	837.5	846.0
55°	673.1	684.7	696.3	708.0	719.6	731.7	744.5	757.2	769.9	782.6	792.1
57.5°	611.5	623.6	635.7	647.8	660.0	673.1	686.9	700.8	714.7	728.6	738.2
60°	568.3	581.0	593.7	606.4	619.0	632.7	647.1	661.6	676.1	690.5	700.4
62.5°	527.7	540.7	553.6	566.6	579.6	593.7	609.0	624.3	639.6	655.0	664.8
65°	465.1	478.9	492.6	506.3	520.2	534.8	550.3	565.8	581.4	596.8	607.4
67.5°	401.6	416.3	430.8	445.5	460.0	475.2	491.0	506.9	522.6	538.5	550.0
70°	357.2	372.3	387.5	402.6	417.9	433.9	450.8	467.8	484.7	501.6	512.9
72.5°	316.5	331.7	346.9	362.0	377.2	393.5	411.0	428.5	446.1	463.5	475.1
75°	252.4	269.0	285.6	302.2	318.7	335.8	353.5	371.1	388.7	406.4	418.0
77.5°	196.5	213.3	229.9	246.7	263.4	280.6	298.4	316.2	334.0	351.7	364.1
80°	157.1	174.4	191.8	209.0	226.3	244.1	262.5	280.8	299.1	317.5	329.5
82.5°	122.9	140.5	158.0	175.6	193.1	211.3	229.8	248.5	267.1	285.7	297.7
85°	77.8	95.4	113.1	130.7	148.3	166.5	185.2	203.9	222.6	241.3	253.3
87.5°	42.5	60.6	78.8	96.9	115.0	133.5	152.3	171.0	189.8	208.4	220.7
90°	21.9	42.1	62.3	82.4	102.6	123.6	145.3	167.0	188.8	210.6	223.7
92.5°	43.5	58.3	73.1	87.9	102.7	120.3	140.9	161.4	181.9	202.5	216.0
95°	96.6	98.6	100.5	102.5	104.4	115.5	136.0	156.5	176.9	197.4	210.4
97.5°	174.7	181.9	188.9	196.1	203.2	204.6	200.4	196.1	191.8	187.5	200.4
100°	233.8	250.7	267.8	284.9	301.9	296.1	267.3	238.5	209.7	181.0	193.5
102.5°	301.0	315.4	329.6	344.0	358.3	348.8	315.6	282.4	249.1	215.9	218.7
105°	399.7	411.3	422.9	434.5	446.3	446.7	435.9	425.1	414.2	403.4	362.2
107.5°	502.1	511.9	521.6	531.4	541.1	555.2	573.7	592.2	610.7	629.1	601.2
110°	570.5	579.2	587.8	596.4	605.1	618.0	635.4	652.7	669.9	687.2	686.9



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	636.9	644.3	651.6	658.8	666.2	678.1	694.9	711.7	728.3	745.1	754.1
115°	733.8	739.7	745.7	751.7	757.7	768.3	783.6	798.9	814.2	829.5	840.8
117.5°	828.8	833.5	838.3	843.0	847.8	856.8	870.0	883.3	896.6	909.8	920.5
120°	886.8	891.1	895.4	899.8	904.2	912.6	925.1	937.7	950.2	962.6	973.1
122.5°	947.0	950.1	953.1	956.1	959.2	966.8	979.0	991.2	1003.3	1015.5	1024.9
125°	1027.9	1030.3	1032.6	1034.9	1037.2	1044.1	1055.4	1066.8	1078.2	1089.6	1097.6
127.5°	1108.0	1109.9	1111.9	1113.9	1115.8	1121.7	1131.6	1141.5	1151.2	1161.1	1169.0
130°	1157.8	1159.8	1161.7	1163.7	1165.7	1170.7	1178.9	1187.2	1195.4	1203.6	1211.4
132.5°	1204.4	1206.6	1208.8	1211.0	1213.4	1217.7	1224.3	1230.8	1237.4	1244.0	1251.5
135°	1277.0	1278.4	1279.8	1281.1	1282.5	1285.8	1290.8	1295.8	1300.8	1305.9	1313.1
137.5°	1339.0	1340.9	1342.8	1344.7	1346.7	1349.1	1351.9	1354.6	1357.5	1360.3	1367.3
140°	1379.3	1381.0	1382.8	1384.5	1386.2	1388.1	1390.0	1391.9	1393.8	1395.7	1402.2
142.5°	1417.7	1419.2	1420.7	1422.1	1423.5	1424.8	1425.9	1426.9	1428.1	1429.2	1434.7
145°	1471.5	1473.2	1474.8	1476.5	1478.1	1479.3	1479.9	1480.5	1481.1	1481.6	1485.0
147.5°	1520.6	1521.9	1523.2	1524.5	1525.9	1526.8	1527.4	1527.9	1528.5	1529.1	1530.6
150°	1551.8	1552.6	1553.5	1554.3	1555.2	1555.9	1556.5	1557.0	1557.6	1558.2	1558.8
152.5°	1579.7	1580.1	1580.5	1580.9	1581.3	1581.8	1582.2	1582.5	1582.8	1583.2	1584.2
155°	1619.2	1618.7	1618.1	1617.5	1616.9	1616.8	1617.1	1617.4	1617.7	1617.9	1619.4
157.5°	1649.9	1649.8	1649.8	1649.7	1649.6	1649.5	1649.2	1648.9	1648.6	1648.3	1650.0
160°	1668.6	1668.3	1668.0	1667.7	1667.4	1667.2	1666.9	1666.6	1666.3	1666.0	1667.7
162.5°	1686.3	1685.5	1684.8	1683.9	1683.2	1682.7	1682.4	1682.1	1681.8	1681.5	1683.5
165°	1707.6	1706.7	1705.8	1705.0	1704.0	1703.5	1703.2	1702.9	1702.6	1702.3	1704.7
167.5°	1724.1	1723.0	1721.8	1720.7	1719.5	1719.0	1719.0	1719.0	1719.0	1719.0	1721.3
170°	1733.5	1732.3	1731.2	1730.1	1728.9	1728.3	1728.3	1728.3	1728.3	1728.3	1730.6
172.5°	1739.8	1738.4	1737.0	1735.6	1734.2	1733.6	1733.8	1734.1	1734.3	1734.5	1736.9
175°	1747.8	1746.4	1744.9	1743.4	1742.0	1741.4	1741.7	1742.0	1742.3	1742.6	1744.6
177.5°	1749.9	1748.7	1747.6	1746.5	1745.2	1744.8	1745.0	1745.2	1745.5	1745.8	1747.6
180°	1747.8	1747.8	1747.8	1747.8	1747.8	1747.8	1747.8	1747.8	1747.8	1747.8	1747.8



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2	1457.2
2.5°	1454.1	1456.4	1458.6	1459.7	1459.4	1459.1	1458.8	1458.5
5°	1451.8	1454.6	1457.4	1458.6	1458.3	1457.9	1457.6	1457.2
7.5°	1443.0	1446.5	1450.1	1451.7	1451.2	1450.8	1450.4	1450.0
10°	1434.1	1437.6	1441.2	1442.6	1441.9	1441.2	1440.5	1439.8
12.5°	1422.2	1425.4	1428.7	1429.9	1429.2	1428.5	1427.7	1427.0
15°	1399.2	1402.7	1406.2	1407.9	1407.5	1407.1	1406.8	1406.4
17.5°	1369.3	1372.5	1375.6	1377.0	1376.5	1376.0	1375.5	1375.0
20°	1347.7	1350.9	1354.0	1355.8	1356.1	1356.6	1356.9	1357.3
22.5°	1324.0	1328.1	1332.0	1333.9	1333.7	1333.5	1333.3	1333.1
25°	1283.8	1288.5	1293.0	1295.4	1295.4	1295.4	1295.4	1295.4
27.5°	1241.9	1245.9	1249.8	1251.9	1252.2	1252.5	1252.8	1253.1
30°	1213.4	1217.6	1221.7	1223.9	1223.9	1223.9	1223.9	1223.9
32.5°	1182.1	1186.7	1191.1	1193.9	1194.7	1195.6	1196.4	1197.2
35°	1136.1	1141.3	1146.6	1150.0	1151.4	1152.9	1154.3	1155.6
37.5°	1088.2	1094.3	1100.2	1103.8	1105.0	1106.1	1107.2	1108.3
40°	1056.5	1062.5	1068.5	1072.2	1073.6	1075.0	1076.4	1077.8
42.5°	1023.4	1030.0	1036.5	1040.8	1042.7	1044.7	1046.6	1048.6
45°	973.8	980.5	987.2	992.0	994.8	997.6	1000.5	1003.2
47.5°	923.7	931.3	938.9	943.7	945.8	948.1	950.3	952.4
50°	889.3	897.5	905.5	910.8	913.3	915.7	918.3	920.7
52.5°	854.3	862.7	871.1	876.9	879.9	882.9	886.0	889.0
55°	801.6	811.1	820.7	826.9	829.7	832.5	835.4	838.2
57.5°	747.8	757.4	767.0	773.5	776.8	780.1	783.5	786.7
60°	710.2	720.1	730.0	736.9	740.8	744.7	748.5	752.5
62.5°	674.7	684.6	694.5	701.3	704.8	708.4	712.1	715.6
65°	618.0	628.6	639.2	646.2	649.7	653.3	656.8	660.4
67.5°	561.6	573.2	584.7	592.0	595.0	597.9	600.9	603.9
70°	524.2	535.5	546.7	554.2	557.7	561.3	564.7	568.3
72.5°	486.7	498.3	509.8	517.4	520.9	524.4	528.0	531.5
75°	429.7	441.3	452.9	460.9	465.1	469.4	473.6	477.8
77.5°	376.3	388.6	400.9	408.6	411.9	415.2	418.4	421.6
80°	341.4	353.5	365.5	373.2	376.8	380.3	383.8	387.3
82.5°	309.7	321.7	333.7	341.4	345.0	348.5	352.0	355.6
85°	265.3	277.3	289.2	297.0	300.5	304.1	307.6	311.1
87.5°	232.9	245.1	257.4	265.3	268.9	272.6	276.2	279.8
90°	236.8	249.9	263.2	271.8	275.9	279.9	284.1	288.2
92.5°	229.5	243.2	256.7	265.3	268.8	272.5	276.0	279.6
95°	223.3	236.3	249.2	257.5	260.9	264.5	268.0	271.6
97.5°	213.2	226.0	238.8	247.1	251.0	254.8	258.6	262.4
100°	206.0	218.5	231.2	239.2	243.1	246.9	250.7	254.6
102.5°	221.5	224.3	227.1	230.6	234.6	238.6	242.7	246.7
105°	321.0	279.8	238.6	219.9	223.7	227.4	231.2	234.9
107.5°	573.2	545.1	517.2	485.4	450.1	414.7	379.3	344.0
110°	686.5	686.2	685.8	666.4	627.9	589.6	551.1	512.6





TEST NUMBER: P332230-840

CATALOG NUMBER: S123DIW-S1165D1320U840-4F0-1E-UDD-D

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	763.2	772.2	781.3	783.0	777.4	771.8	766.2	760.6
115°	852.2	863.5	874.8	882.5	886.6	890.5	894.4	898.5
117.5°	931.2	941.9	952.6	959.5	962.4	965.4	968.4	971.4
120°	983.5	993.9	1004.3	1010.8	1013.2	1015.7	1018.1	1020.7
122.5°	1034.4	1043.9	1053.3	1059.3	1062.1	1064.8	1067.4	1070.2
125°	1105.6	1113.6	1121.6	1127.1	1130.1	1133.2	1136.2	1139.2
127.5°	1176.9	1184.9	1192.8	1197.6	1199.4	1201.2	1203.1	1204.9
130°	1219.3	1227.2	1235.0	1239.7	1241.2	1242.7	1244.4	1245.9
132.5°	1259.1	1266.7	1274.2	1278.9	1280.4	1282.0	1283.6	1285.3
135°	1320.3	1327.6	1334.7	1338.8	1339.7	1340.6	1341.5	1342.4
137.5°	1374.2	1381.2	1388.2	1392.2	1393.4	1394.6	1395.8	1396.9
140°	1408.7	1415.1	1421.6	1425.3	1426.5	1427.7	1429.0	1430.1
142.5°	1440.4	1446.0	1451.7	1455.0	1456.0	1456.9	1457.8	1458.9
145°	1488.4	1491.8	1495.2	1497.6	1499.0	1500.5	1501.9	1503.3
147.5°	1532.0	1533.4	1534.8	1535.5	1535.4	1535.4	1535.3	1535.3
150°	1559.3	1559.9	1560.5	1560.7	1560.5	1560.4	1560.2	1560.1
152.5°	1585.2	1586.3	1587.3	1587.2	1586.0	1584.9	1583.7	1582.5
155°	1620.8	1622.2	1623.8	1623.6	1621.8	1620.1	1618.4	1616.7
157.5°	1651.8	1653.6	1655.3	1655.0	1652.7	1650.5	1648.2	1646.0
160°	1669.4	1671.2	1672.9	1672.7	1670.7	1668.7	1666.7	1664.7
162.5°	1685.5	1687.5	1689.4	1689.5	1687.7	1686.0	1684.2	1682.3
165°	1707.0	1709.3	1711.6	1711.7	1709.7	1707.7	1705.7	1703.6
167.5°	1723.6	1725.9	1728.2	1728.2	1725.9	1723.6	1721.3	1719.0
170°	1732.9	1735.3	1737.6	1737.6	1735.3	1732.9	1730.6	1728.3
172.5°	1739.2	1741.5	1743.8	1743.6	1741.1	1738.6	1736.1	1733.5
175°	1746.7	1748.7	1750.7	1750.5	1748.3	1746.0	1743.6	1741.3
177.5°	1749.4	1751.3	1753.1	1752.9	1750.6	1748.3	1746.0	1743.6
180°	1747.8	1747.8	1747.8	1747.8	1747.8	1747.8	1747.8	1747.8

(END OF REPORT)