

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: P243000

Luminaire Tested: **S121DR-H880D935-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243000
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-57)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121DR-H880D935-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3500K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2984.6 lumens
Efficiency: N/A
Efficacy: 94.8 lumens/watt
Spacing Criteria (0/90/45): 1.13 / 1.2 / 1.28
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

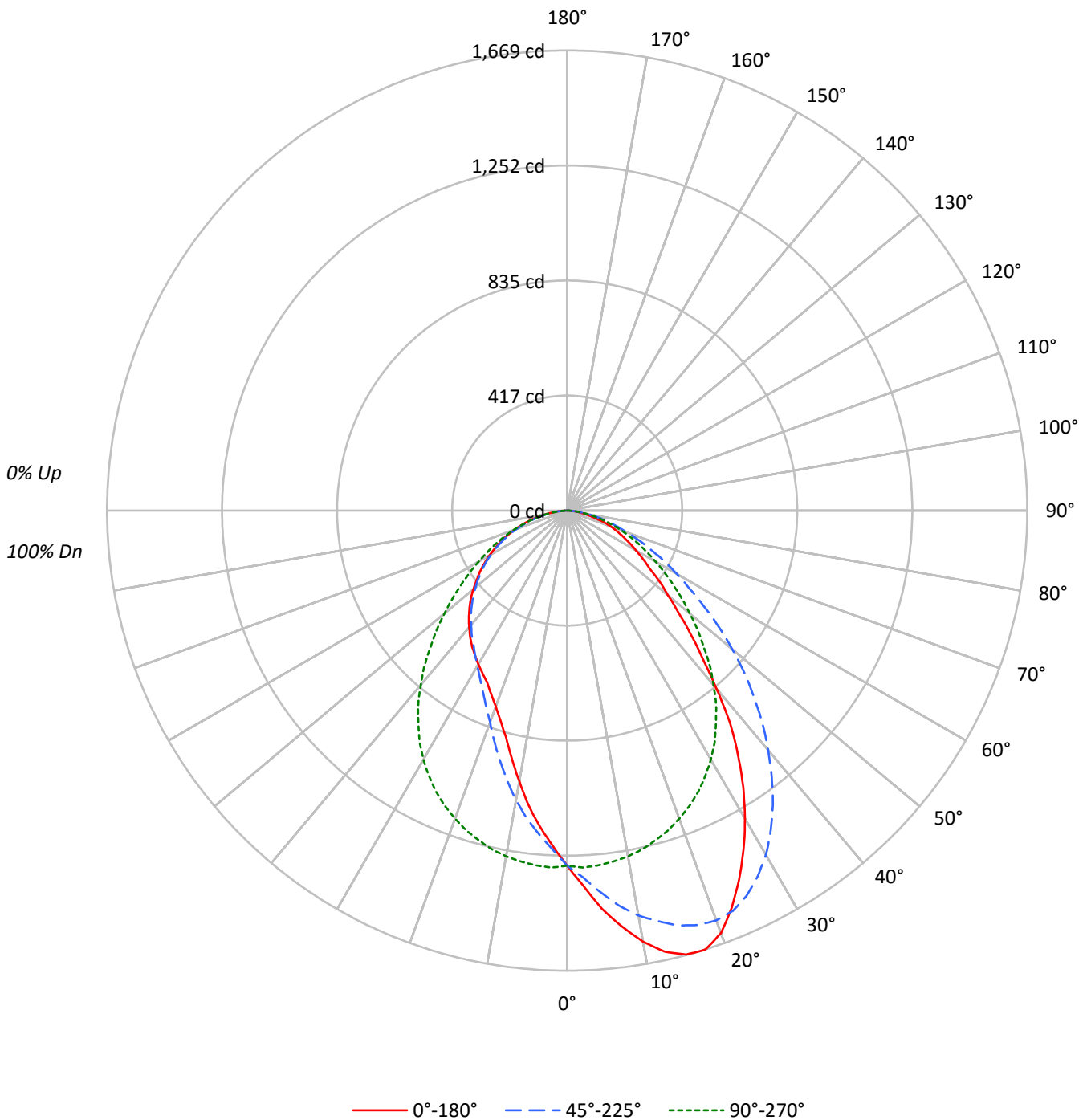
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P243000

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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	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88					86				
2	101	93	87	81	98	91	85	80	88	83	79	84	80	77	81	78	75					73				
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65					63				
4	85	74	66	59	83	72	65	59	70	63	58	68	62	57	66	61	57					54				
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50					48				
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44					42				
7	68	55	46	41	66	54	46	40	53	45	40	51	45	40	50	44	40					38				
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36					34				
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33					31				
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30					28				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	38154	38154	38154
5°	43112	38425	34139
10°	47760	38306	30009
15°	51141	37976	26175
20°	51424	37481	23831
25°	48235	36776	22473
30°	44128	35668	22030
35°	39079	34033	21753
40°	32564	31922	21374
45°	26545	29370	20985
50°	22034	26763	20457
55°	18855	24264	19924
60°	17079	21967	19295
65°	15775	19988	18607
70°	14554	18011	17517
75°	11746	15970	16142
80°	9385	12917	13804
85°	7037	9519	11287



TEST NUMBER: P243000

CATALOG NUMBER: S121DR-H880D935-X4F0-XX-UDD-A-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	123.0	4.1
10°-20°	352.5	11.8
20°-30°	513.2	17.2
30°-40°	572.1	19.2
40°-50°	528.9	17.7
50°-60°	421.4	14.1
60°-70°	288.4	9.7
70°-80°	149.7	5.0
80°-90°	35.5	1.2
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°	988.6	33.1
0°-40°	1560.7	52.3
0°-60°	2511.0	84.1
0°-90°	2984.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2984.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1288	1288	1288	1288	1288	
5°	1450	1389	1292	1177	1148	142
15°	1667	1558	1238	940	853	467
25°	1475	1541	1125	723	687	676
35°	1080	1301	941	592	601	670
45°	634	958	701	489	501	493
55°	365	606	470	376	386	334
65°	225	334	285	258	265	224
75°	103	150	140	132	141	113
85°	21	28	28	30	33	26
90°	0	0	0	0	0	



TEST NUMBER: P243000

CATALOG NUMBER: S121DR-H880D935-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7
2.5°	1362.4	1362.4	1358.7	1360.3	1358.2	1354.6	1348.9	1342.7	1334.9	1331.8	1330.2
5°	1449.5	1451.5	1449.0	1443.8	1442.7	1438.6	1426.1	1418.9	1402.3	1389.3	1385.2
7.5°	1522.0	1525.7	1525.7	1516.3	1512.2	1501.8	1493.0	1481.1	1460.4	1445.8	1433.9
10°	1587.4	1588.9	1583.2	1578.0	1569.7	1561.4	1546.4	1531.4	1509.1	1491.5	1471.8
12.5°	1639.2	1642.3	1638.2	1629.9	1620.0	1609.1	1590.5	1571.3	1549.5	1525.7	1504.4
15°	1667.2	1671.9	1672.4	1665.6	1658.4	1645.4	1631.9	1611.2	1587.4	1557.8	1523.1
17.5°	1669.3	1671.3	1672.9	1667.7	1663.1	1658.4	1644.9	1627.8	1605.0	1576.0	1543.8
20°	1630.9	1635.6	1640.8	1636.1	1638.2	1638.2	1632.5	1623.7	1605.0	1581.7	1550.6
22.5°	1559.4	1570.3	1577.0	1581.7	1586.3	1593.1	1599.8	1595.7	1588.4	1571.3	1543.3
25°	1475.4	1484.2	1497.2	1501.3	1504.9	1524.6	1536.6	1544.9	1544.9	1541.2	1522.6
27.5°	1386.2	1391.9	1402.8	1417.3	1430.8	1442.7	1467.6	1483.2	1495.6	1495.6	1485.8
30°	1289.8	1298.1	1311.1	1320.9	1337.5	1361.9	1382.6	1401.3	1429.8	1442.2	1440.1
32.5°	1188.2	1196.5	1210.0	1218.3	1242.1	1261.8	1293.9	1323.0	1355.6	1374.3	1385.7
35°	1080.4	1080.9	1103.7	1117.2	1137.9	1162.3	1201.7	1234.3	1270.1	1301.2	1325.6
37.5°	969.4	968.9	985.0	1008.8	1025.4	1059.6	1100.1	1136.4	1186.1	1219.3	1257.7
40°	841.9	852.8	866.3	888.0	916.5	957.0	995.3	1042.5	1092.3	1133.8	1174.7
42.5°	727.8	736.7	758.4	782.8	813.4	847.6	894.3	946.6	995.3	1049.3	1094.9
45°	633.5	638.2	651.1	670.8	703.0	741.8	790.6	846.0	903.6	958.5	1009.3
47.5°	546.4	560.4	567.1	585.3	608.6	644.9	695.7	745.5	811.8	873.0	928.5
50°	478.0	480.6	492.5	506.0	533.4	560.4	598.8	650.1	711.8	780.7	837.2
52.5°	422.0	420.9	430.8	442.7	461.9	490.4	523.6	573.4	625.7	694.1	755.8
55°	365.0	370.1	374.8	386.7	403.8	425.6	453.6	495.6	544.8	605.5	670.3
57.5°	325.6	326.1	328.7	338.5	349.9	367.0	394.0	429.8	473.8	526.7	589.4
60°	288.2	288.8	293.4	296.5	304.3	318.8	339.6	369.1	408.0	458.8	513.7
62.5°	256.1	256.6	259.2	262.3	269.6	275.3	292.9	318.3	349.9	395.0	442.2
65°	225.0	225.5	225.5	229.7	234.3	239.5	251.9	268.0	298.6	334.4	376.4
67.5°	194.9	198.0	197.0	200.1	204.3	206.8	215.7	230.2	250.9	281.0	317.3
70°	168.0	167.4	169.0	170.6	172.1	176.3	182.0	191.8	209.4	230.7	262.8
72.5°	138.9	135.8	137.9	140.0	142.6	145.7	150.3	157.6	171.1	188.2	212.0
75°	102.6	101.1	104.2	104.7	109.4	113.5	118.7	126.0	135.8	150.3	165.9
77.5°	74.7	76.7	77.8	78.8	79.3	84.0	89.7	95.9	101.6	115.1	127.0
80°	55.0	55.0	55.5	56.5	57.5	58.6	62.2	66.4	71.0	79.3	91.2
82.5°	38.4	37.8	37.8	38.4	38.9	39.9	41.5	43.0	47.2	51.3	57.5
85°	20.7	21.3	21.8	20.7	21.3	21.8	22.8	24.4	25.4	28.5	31.1
87.5°	7.3	8.8	8.3	8.3	8.8	8.8	8.8	9.8	9.8	9.8	11.4
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: P243000

CATALOG NUMBER: S121DR-H880D935-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7
2.5°	1328.7	1327.1	1323.0	1314.7	1309.0	1298.6	1296.5	1296.0	1286.7	1272.7	1271.7
5°	1377.9	1366.0	1356.2	1341.6	1327.1	1309.5	1299.1	1291.9	1275.3	1254.5	1245.2
7.5°	1423.0	1405.9	1385.7	1362.9	1341.6	1316.8	1298.6	1284.1	1259.7	1233.3	1217.2
10°	1459.3	1438.1	1412.7	1382.1	1353.0	1320.4	1295.0	1273.2	1241.1	1208.4	1186.6
12.5°	1484.2	1460.4	1431.3	1395.6	1360.3	1323.0	1286.2	1258.7	1218.3	1180.4	1152.4
15°	1512.2	1472.8	1442.7	1402.3	1360.8	1316.2	1277.4	1238.0	1191.3	1148.8	1112.5
17.5°	1518.9	1482.6	1446.9	1402.3	1359.3	1304.8	1259.7	1216.2	1164.3	1112.0	1076.7
20°	1525.2	1483.7	1439.6	1391.4	1346.3	1290.3	1239.5	1188.7	1128.6	1072.1	1028.0
22.5°	1520.5	1480.1	1430.8	1376.4	1327.6	1270.1	1215.1	1159.2	1091.8	1032.7	982.9
25°	1507.0	1469.7	1418.9	1359.3	1300.7	1242.1	1184.6	1124.9	1051.8	983.4	928.5
27.5°	1479.5	1446.4	1397.6	1334.4	1272.7	1207.9	1147.8	1085.5	1007.3	937.3	878.7
30°	1442.7	1416.3	1367.0	1303.8	1236.9	1167.5	1105.8	1042.5	961.1	884.9	822.7
32.5°	1391.9	1373.3	1330.8	1269.1	1197.0	1123.4	1060.1	995.9	908.8	836.2	772.9
35°	1334.9	1326.1	1288.2	1226.6	1151.9	1074.7	1006.7	940.9	860.6	783.8	723.2
37.5°	1268.0	1274.2	1240.0	1178.9	1101.6	1022.8	951.3	887.5	806.1	732.5	672.9
40°	1201.7	1211.0	1185.1	1128.1	1047.7	966.3	893.7	825.3	749.6	684.8	625.7
42.5°	1128.1	1146.7	1126.5	1071.0	992.8	906.7	831.0	767.2	695.2	635.6	583.7
45°	1049.8	1073.6	1065.3	1008.8	931.6	847.1	767.2	700.9	642.8	589.9	542.8
47.5°	970.5	997.9	994.3	947.1	873.0	786.4	707.6	642.3	588.9	546.4	507.0
50°	889.1	917.1	917.6	875.6	806.6	724.2	639.7	580.6	538.1	500.8	468.6
52.5°	809.8	837.7	838.3	805.6	736.7	656.3	578.5	524.6	488.3	459.3	432.4
55°	726.8	759.5	762.6	731.0	669.8	592.5	521.0	469.7	437.5	418.9	395.5
57.5°	642.8	678.1	684.3	658.9	599.8	527.7	467.6	418.4	392.4	379.5	361.8
60°	564.5	599.3	609.1	580.1	531.4	469.7	412.1	370.7	349.9	339.6	327.1
62.5°	492.5	527.2	532.4	507.5	459.3	407.5	363.9	326.1	309.0	301.2	291.3
65°	422.0	453.1	459.8	437.5	394.0	351.0	312.6	285.1	270.1	263.4	257.1
67.5°	357.2	386.2	390.9	370.7	334.4	297.6	269.6	245.7	235.4	226.5	224.0
70°	296.0	322.4	326.6	306.4	277.9	247.8	224.5	207.9	198.0	192.8	189.2
72.5°	239.5	260.2	263.9	251.4	229.1	202.7	184.6	170.6	164.3	159.7	158.1
75°	187.1	207.4	207.9	197.0	178.9	160.7	146.7	139.5	132.2	127.5	126.5
77.5°	143.6	155.0	156.6	150.9	133.2	121.8	110.9	105.8	103.2	98.5	98.5
80°	102.6	109.4	112.0	103.7	95.4	85.5	79.8	75.7	73.6	70.5	70.5
82.5°	63.8	69.5	72.6	66.4	62.2	57.0	52.9	50.3	48.7	47.2	46.7
85°	34.7	38.9	38.9	36.8	33.2	30.6	29.0	28.0	27.5	27.0	26.4
87.5°	12.4	15.6	14.0	14.5	13.0	12.4	11.9	11.9	12.4	11.4	11.4
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: P243000

CATALOG NUMBER: S121DR-H880D935-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7	1287.7
2.5°	1264.9	1262.3	1254.5	1247.3	1241.6	1229.1	1226.6	1227.6	1227.6	1228.1	1222.4
5°	1234.3	1223.4	1211.0	1199.6	1190.8	1176.8	1169.0	1166.9	1165.4	1162.3	1156.6
7.5°	1199.6	1187.2	1169.5	1159.2	1140.5	1124.9	1114.1	1106.8	1102.1	1095.4	1086.1
10°	1164.3	1146.2	1126.5	1105.8	1087.1	1066.4	1049.3	1041.0	1031.1	1024.4	1014.0
12.5°	1129.1	1103.7	1076.7	1052.9	1027.5	1003.1	985.5	974.1	956.5	946.6	935.7
15°	1083.0	1051.8	1029.0	987.6	975.1	939.9	918.6	909.8	892.7	889.6	872.5
17.5°	1039.4	1003.6	969.9	935.2	902.0	877.7	859.5	848.1	834.6	826.3	814.9
20°	985.0	947.6	907.2	870.9	842.9	817.0	805.6	791.1	783.3	775.0	766.7
22.5°	933.1	887.5	847.1	817.5	789.0	767.8	755.3	745.5	738.7	730.4	724.7
25°	877.7	835.2	797.8	767.2	739.8	723.2	712.8	707.1	703.0	696.7	693.1
27.5°	824.8	781.8	745.0	721.6	699.3	684.8	679.6	674.4	669.3	667.2	666.7
30°	768.3	728.9	698.8	678.6	658.4	650.6	648.0	642.8	643.9	644.4	642.8
32.5°	720.6	682.2	659.4	642.3	626.8	621.1	620.5	618.5	619.0	621.6	620.5
35°	671.3	642.8	620.0	606.0	596.2	592.0	592.5	593.1	596.2	596.7	598.8
37.5°	629.3	601.9	586.8	573.4	568.7	568.7	569.2	569.7	572.3	575.4	576.5
40°	587.9	565.6	552.6	543.8	541.2	541.2	543.3	545.9	547.4	550.5	551.1
42.5°	550.5	531.9	522.0	513.2	514.3	516.9	517.4	518.9	523.1	523.6	524.6
45°	513.7	499.7	489.9	487.3	487.3	489.4	492.0	493.0	496.1	496.6	497.7
47.5°	482.1	467.6	460.3	457.8	459.3	461.9	465.5	467.1	469.7	469.2	471.8
50°	446.9	434.9	429.2	428.2	429.2	433.9	435.5	439.1	441.7	443.2	444.3
52.5°	413.2	403.8	401.2	400.7	402.8	405.9	408.0	411.6	414.7	414.7	414.2
55°	381.0	372.7	369.6	372.2	374.8	376.4	380.5	382.6	385.7	386.2	385.7
57.5°	348.4	341.1	340.1	341.1	346.3	349.4	352.0	352.0	353.6	354.1	355.6
60°	314.7	310.0	309.0	311.6	317.3	319.3	320.9	321.4	323.5	322.4	325.6
62.5°	283.1	278.4	280.5	283.1	285.1	288.2	289.3	291.9	291.3	292.4	293.9
65°	250.4	247.8	248.3	251.4	254.0	258.2	258.2	258.2	260.8	260.8	261.8
67.5°	218.8	217.2	219.3	221.9	222.4	225.0	224.5	227.6	229.7	230.7	231.7
70°	188.2	187.1	187.1	189.7	192.3	193.4	194.4	196.5	197.0	198.6	201.1
72.5°	159.2	156.0	156.6	160.2	160.2	162.3	164.9	164.9	168.0	168.5	171.1
75°	127.5	126.5	127.5	129.6	132.2	131.7	134.8	134.3	135.3	138.9	139.5
77.5°	99.5	98.0	100.6	101.6	102.1	102.6	103.7	106.3	108.3	109.9	110.4
80°	71.5	71.0	73.6	74.7	74.1	75.2	76.7	79.3	79.3	80.4	81.9
82.5°	48.2	47.2	48.7	50.3	51.3	51.8	51.8	52.9	53.4	54.4	54.4
85°	27.5	27.5	28.5	29.0	30.1	29.5	30.6	30.1	31.1	32.1	31.6
87.5°	11.9	11.9	11.9	11.9	12.4	12.4	13.0	13.0	12.4	13.0	11.9
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: P243000

CATALOG NUMBER: S121DR-H880D935-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1287.7	1287.7	1287.7	1287.7
2.5°	1220.3	1221.4	1218.8	1216.2
5°	1156.0	1152.4	1148.8	1147.8
7.5°	1084.0	1084.0	1075.2	1077.3
10°	1006.7	1003.6	996.9	997.4
12.5°	931.6	929.0	925.4	923.8
15°	863.7	865.2	867.8	853.3
17.5°	810.3	806.1	804.1	801.5
20°	762.6	760.5	756.4	755.8
22.5°	725.8	721.1	720.1	720.6
25°	690.5	690.5	690.5	687.4
27.5°	665.6	665.6	664.1	664.6
30°	643.9	644.9	643.3	643.9
32.5°	623.1	623.6	622.6	622.1
35°	599.8	601.4	600.8	601.4
37.5°	577.5	578.5	577.5	577.5
40°	552.1	554.7	554.2	552.6
42.5°	526.7	526.7	528.3	527.7
45°	500.3	499.2	499.2	500.8
47.5°	472.3	474.3	473.3	473.8
50°	446.3	445.8	444.3	443.8
52.5°	415.8	416.8	416.3	413.7
55°	386.2	386.2	385.7	385.7
57.5°	354.6	356.1	355.6	355.6
60°	324.5	325.6	326.1	325.6
62.5°	293.9	294.5	293.9	294.5
65°	264.4	264.4	263.9	265.4
67.5°	232.2	232.8	232.2	233.3
70°	201.7	202.7	203.2	202.2
72.5°	172.6	171.6	172.1	171.1
75°	140.5	141.0	140.5	141.0
77.5°	110.4	110.9	110.4	110.9
80°	81.4	81.4	81.9	80.9
82.5°	55.0	55.0	56.5	55.0
85°	32.1	32.1	31.1	33.2
87.5°	12.4	12.4	12.4	12.4
90°	0.0	0.0	0.0	0.0

(END OF REPORT)