

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: P242232

Luminaire Tested: **S121RDR-S685D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242232
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-28)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121RDR-S685D840-X4F0-XX-UDD-A-W
Description: DEFINE 1 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: 2433.6 lumens
Efficiency: N/A
Efficacy: 92.2 lumens/watt
Spacing Criteria (0/90/45): 0.96 / 1.23 / 1.1
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

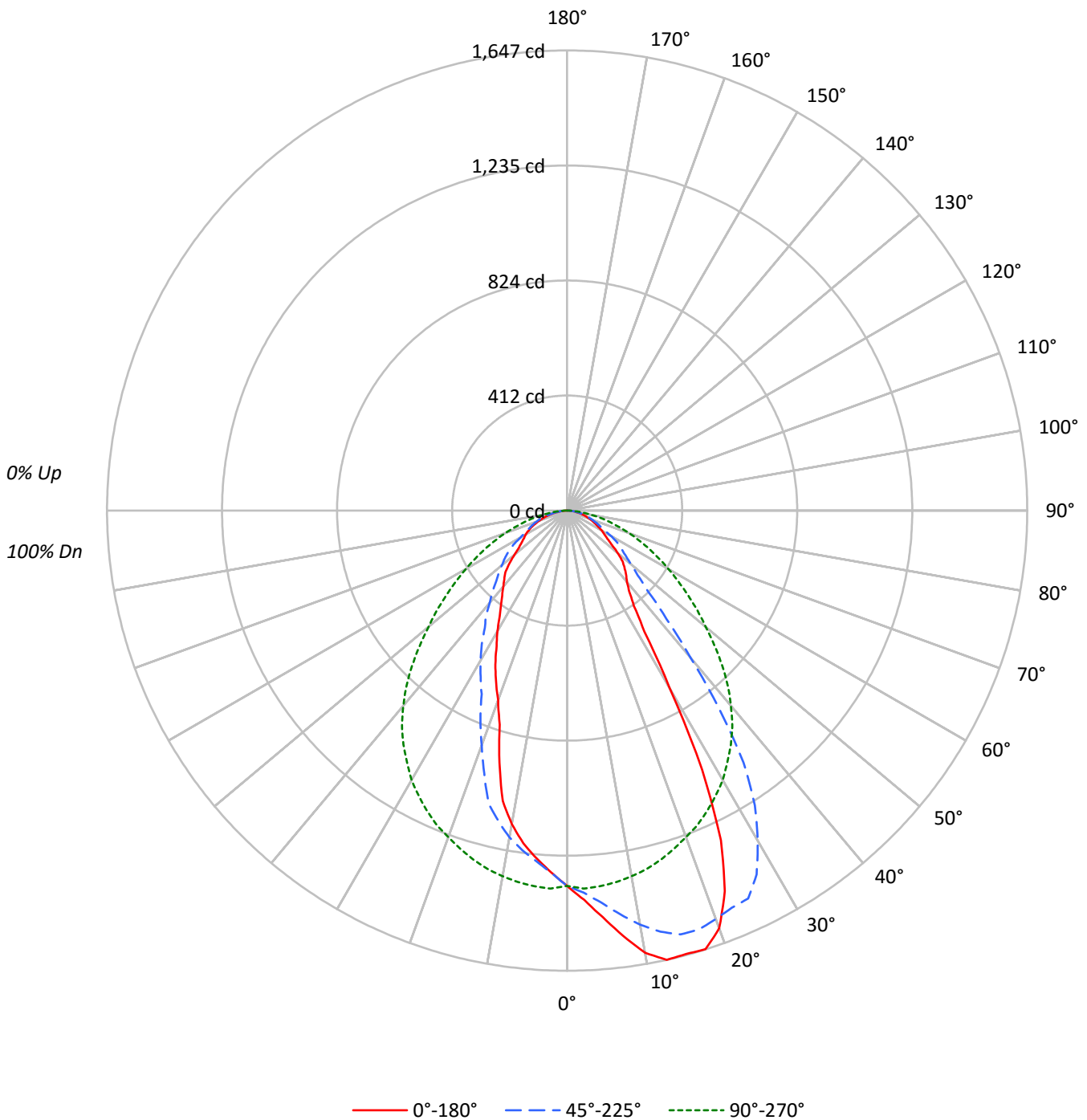
Input Watts (W): 26.4
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	100	100	100	100	100		
1	111	107	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89	87	87	87	87	87	87	87		
2	102	95	89	84	100	93	88	83	90	85	82	87	83	80	84	81	78	76	76	76	76	76	76	76		
3	94	85	78	73	92	84	77	72	81	75	71	78	74	70	76	72	68	67	67	67	67	67	67	67		
4	88	77	69	64	85	76	69	63	73	67	62	71	66	61	69	65	61	59	59	59	59	59	59	59		
5	81	70	62	56	79	69	62	56	67	60	55	65	59	55	63	58	54	52	52	52	52	52	52	52		
6	76	64	56	50	74	63	56	50	61	55	50	60	54	49	58	53	49	47	47	47	47	47	47	47		
7	71	59	51	45	69	58	51	45	57	50	45	55	49	45	54	48	44	43	43	43	43	43	43	43		
8	67	54	47	41	65	54	46	41	52	46	41	51	45	41	50	45	40	39	39	39	39	39	39	39		
9	63	50	43	38	61	50	43	38	49	42	37	48	42	37	47	41	37	35	35	35	35	35	35	35		
10	59	47	40	35	58	46	39	35	45	39	35	44	39	34	44	38	34	33	33	33	33	33	33	33		

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	39799	39799	39799
5°	43434	40147	37188
10°	48343	39988	34275
15°	50402	39684	28687
20°	50185	39215	22769
25°	42559	38780	19877
30°	25051	38110	17069
35°	15051	36949	14903
40°	12892	35275	13750
45°	12190	32881	13078
50°	10892	29865	11312
55°	9076	27260	10223
60°	8439	24836	10175
65°	7789	22624	9843
70°	7346	20384	9278
75°	6938	18031	8437
80°	6211	15084	7405
85°	5847	11831	5847



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	128.8	5.3
10°-20°	366.8	15.1
20°-30°	501.1	20.6
30°-40°	466.8	19.2
40°-50°	385.9	15.9
50°-60°	284.6	11.7
60°-70°	181.9	7.5
70°-80°	93.6	3.8
80°-90°	24.1	1.0
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°	996.7	41.0
0°-40°	1463.5	60.1
0°-60°	2134.0	87.7
0°-90°	2433.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2433.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1343	1343	1343	1343	1343	
5°	1460	1409	1350	1260	1250	144
15°	1643	1570	1294	1085	935	463
25°	1302	1532	1186	724	608	565
35°	416	1101	1022	514	412	283
45°	291	410	785	360	312	223
55°	176	235	528	257	198	162
65°	111	128	323	150	140	111
75°	61	66	158	83	74	63
85°	17	18	35	20	17	19
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°	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2
2.5°	1394.7	1393.7	1395.2	1394.2	1393.2	1390.7	1388.6	1382.6	1373.5	1368.4	1373.5
5°	1460.3	1464.4	1462.9	1460.9	1456.3	1452.3	1443.2	1437.6	1421.5	1408.8	1412.4
7.5°	1535.1	1540.1	1533.6	1529.0	1526.5	1514.9	1504.8	1489.1	1471.5	1457.3	1449.2
10°	1606.8	1608.3	1606.3	1602.2	1593.7	1581.0	1566.4	1548.7	1526.5	1504.8	1490.1
12.5°	1647.2	1649.7	1652.7	1645.7	1639.1	1629.0	1613.9	1596.2	1568.9	1543.7	1527.0
15°	1643.1	1645.2	1650.7	1648.2	1645.2	1640.6	1632.0	1617.4	1598.2	1570.4	1546.7
17.5°	1646.2	1647.7	1650.2	1641.1	1636.1	1630.5	1619.4	1609.3	1593.2	1571.4	1553.8
20°	1591.6	1616.4	1613.3	1625.5	1630.5	1630.0	1619.4	1600.2	1578.0	1555.8	1547.7
22.5°	1474.5	1494.2	1496.7	1515.4	1538.6	1557.3	1580.5	1589.1	1571.9	1538.6	1527.5
25°	1301.8	1315.9	1330.1	1356.8	1381.6	1433.6	1481.1	1516.9	1536.6	1532.1	1510.3
27.5°	1046.3	1031.1	1087.2	1118.0	1187.2	1262.9	1329.6	1395.2	1426.5	1468.4	1489.6
30°	732.2	730.7	773.1	826.6	930.1	999.8	1124.5	1230.1	1312.4	1363.9	1421.5
32.5°	514.1	521.6	552.9	585.8	642.8	756.4	851.9	997.3	1137.7	1250.3	1321.0
35°	416.1	417.1	424.2	443.9	478.7	541.8	616.1	757.4	947.8	1100.8	1206.4
37.5°	364.6	367.6	369.6	380.7	393.4	420.1	467.1	565.1	722.6	893.3	1076.6
40°	333.3	335.8	337.8	341.4	348.9	361.6	392.4	439.3	530.2	687.3	891.3
42.5°	312.1	311.1	315.6	317.1	321.2	328.2	341.9	367.1	419.6	526.2	701.9
45°	290.9	292.4	292.4	294.4	297.9	302.0	307.5	323.2	349.9	410.5	548.4
47.5°	268.6	268.1	271.2	272.7	276.2	279.7	283.8	291.9	307.5	342.9	422.7
50°	236.3	237.3	242.9	247.9	253.0	257.5	262.6	267.6	277.7	296.9	345.9
52.5°	202.0	202.0	208.0	211.6	218.6	229.8	238.3	245.9	252.5	262.1	291.4
55°	175.7	176.2	178.3	181.3	186.3	191.9	203.0	216.1	227.2	235.3	251.5
57.5°	157.5	158.1	158.6	161.1	163.6	165.6	172.2	182.3	196.9	211.6	221.2
60°	142.4	141.9	141.9	143.4	145.4	148.0	151.5	155.5	163.6	179.3	196.4
62.5°	125.2	126.2	126.2	127.8	129.3	131.8	133.3	137.3	141.9	149.0	166.6
65°	111.1	112.1	111.1	112.6	113.6	115.1	117.7	119.7	123.7	128.3	135.3
67.5°	97.0	97.5	98.5	99.0	100.0	100.5	102.5	105.0	107.6	110.6	116.1
70°	84.8	84.8	84.8	85.8	86.9	86.9	88.4	89.4	91.9	94.9	98.0
72.5°	71.7	72.2	72.2	71.7	73.7	74.2	74.7	75.7	77.8	80.3	82.8
75°	60.6	59.6	59.6	60.1	61.6	61.6	62.1	62.6	64.1	66.1	67.7
77.5°	47.5	47.5	48.0	48.5	49.0	49.0	50.0	50.0	52.0	53.0	54.0
80°	36.4	37.4	37.9	37.4	37.4	37.9	37.9	38.9	39.4	39.9	40.9
82.5°	27.3	27.8	26.8	26.8	27.3	27.3	27.8	27.8	28.3	28.8	28.8
85°	17.2	17.2	17.7	17.2	17.7	17.2	17.2	18.2	17.7	17.7	18.2
87.5°	8.1	8.6	8.1	8.6	8.1	8.6	8.6	8.6	8.6	8.6	8.1
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°	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2
2.5°	1372.0	1371.5	1368.9	1363.4	1359.4	1351.8	1351.8	1354.3	1341.2	1332.1	1331.6
5°	1403.8	1398.7	1390.2	1379.6	1370.0	1356.8	1351.8	1349.8	1332.1	1318.5	1313.9
7.5°	1437.6	1425.0	1410.4	1393.2	1377.0	1358.3	1348.8	1341.2	1318.5	1301.8	1291.7
10°	1473.0	1452.8	1430.0	1405.3	1383.1	1357.8	1342.2	1329.1	1302.8	1279.6	1268.0
12.5°	1504.3	1476.0	1447.2	1414.9	1384.6	1352.8	1331.1	1313.9	1283.1	1255.3	1241.2
15°	1518.9	1488.6	1464.9	1420.5	1379.6	1347.2	1319.5	1293.7	1260.9	1230.1	1208.4
17.5°	1531.5	1498.2	1466.9	1425.0	1377.5	1335.6	1302.3	1269.5	1234.1	1201.8	1175.0
20°	1528.0	1499.7	1461.4	1416.9	1372.0	1323.5	1285.6	1243.7	1199.8	1167.0	1138.7
22.5°	1507.8	1484.6	1444.7	1402.3	1358.8	1306.8	1263.9	1218.5	1164.4	1128.6	1096.8
25°	1482.1	1459.8	1420.5	1376.5	1333.6	1283.1	1232.6	1186.2	1128.1	1085.2	1044.3
27.5°	1461.9	1428.5	1389.1	1340.2	1298.8	1250.8	1197.8	1150.8	1088.2	1040.7	993.3
30°	1438.6	1400.8	1352.3	1300.3	1256.3	1212.4	1160.9	1113.9	1044.8	990.7	931.7
32.5°	1372.0	1372.5	1314.9	1256.8	1209.9	1162.9	1117.0	1067.0	998.3	934.7	874.1
35°	1285.1	1319.0	1276.5	1209.9	1151.8	1108.4	1070.5	1021.5	945.3	879.6	811.0
37.5°	1169.0	1228.6	1233.6	1164.4	1100.3	1049.3	1011.9	971.0	894.3	823.6	755.4
40°	1052.8	1131.6	1162.9	1115.0	1045.3	986.7	949.3	912.0	839.7	763.5	700.4
42.5°	910.4	1038.2	1077.1	1062.9	988.2	925.1	885.7	851.9	781.7	706.9	644.3
45°	749.9	922.6	979.1	993.8	930.6	863.0	817.5	784.7	723.1	657.5	592.3
47.5°	602.4	792.3	885.7	900.9	867.5	801.9	749.9	715.5	666.5	610.0	545.4
50°	459.5	653.9	787.7	811.0	802.9	736.2	688.3	647.9	610.5	560.0	499.4
52.5°	365.6	522.6	681.7	725.1	727.6	675.1	624.6	587.8	551.4	511.5	456.5
55°	291.9	404.0	565.1	638.8	645.8	609.5	563.0	527.7	500.4	463.0	416.6
57.5°	245.9	312.6	452.4	551.9	555.0	544.9	500.4	471.1	448.4	416.1	375.2
60°	210.1	247.9	348.9	465.1	480.2	480.2	444.9	419.1	397.4	373.2	334.3
62.5°	181.8	202.5	264.6	369.6	408.5	414.6	392.4	369.6	353.5	329.2	293.4
65°	153.0	168.7	205.0	285.8	339.3	350.4	339.3	322.7	310.0	284.8	256.5
67.5°	125.7	140.9	163.6	216.6	275.2	288.8	286.8	278.2	265.1	246.4	216.6
70°	104.0	113.1	129.8	160.6	216.1	236.8	242.9	235.3	223.7	203.5	181.8
72.5°	85.8	92.9	101.0	123.2	161.6	188.9	199.0	194.9	186.3	167.1	149.0
75°	70.2	74.7	80.3	90.9	116.1	146.9	158.6	157.5	149.0	132.8	118.2
77.5°	56.6	58.1	62.1	68.7	81.3	109.1	118.2	121.2	114.6	101.0	89.4
80°	42.4	44.4	46.5	50.0	56.1	72.2	83.8	88.4	82.8	74.7	63.1
82.5°	29.8	30.3	32.3	34.3	37.4	43.9	56.1	61.1	56.1	47.5	43.9
85°	18.7	18.2	18.7	19.2	22.2	23.7	31.3	34.8	33.8	28.8	24.7
87.5°	8.6	8.6	8.1	8.6	8.1	9.6	11.1	16.2	12.1	10.6	9.6
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°	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2	1343.2
2.5°	1327.5	1326.0	1321.0	1313.9	1307.8	1297.7	1297.7	1300.3	1299.8	1300.8	1299.8
5°	1306.3	1299.3	1291.7	1282.1	1273.0	1259.9	1258.4	1259.4	1258.9	1258.4	1255.3
7.5°	1279.1	1271.0	1261.4	1249.3	1239.2	1226.5	1223.0	1222.0	1218.0	1216.5	1212.4
10°	1252.8	1243.2	1230.6	1215.9	1202.3	1187.7	1178.6	1173.5	1167.0	1159.9	1153.8
12.5°	1223.5	1210.9	1194.7	1177.1	1154.3	1138.2	1124.5	1116.0	1106.9	1094.8	1086.2
15°	1192.2	1166.5	1147.3	1118.5	1090.7	1085.2	1064.5	1037.2	1035.2	976.1	955.4
17.5°	1150.3	1129.1	1093.2	1055.9	1018.0	987.2	987.7	914.0	891.3	890.8	854.4
20°	1106.9	1077.6	1036.2	998.3	958.4	894.8	844.3	820.1	783.2	769.1	748.4
22.5°	1055.9	1017.5	969.0	917.5	862.0	810.5	761.0	737.7	719.1	703.4	694.8
25°	995.3	956.4	898.3	834.2	772.1	724.1	696.8	686.2	654.4	643.3	632.7
27.5°	934.2	891.8	816.0	754.4	703.4	670.6	642.3	624.6	609.5	581.2	568.6
30°	876.1	807.9	745.3	688.8	650.4	619.6	598.9	563.0	541.8	528.7	523.1
32.5°	813.0	740.3	683.7	634.7	595.3	568.6	537.8	513.5	504.0	486.8	462.0
35°	748.4	682.2	623.1	583.7	549.9	513.5	494.4	471.1	446.9	433.8	431.7
37.5°	685.7	623.1	580.7	539.3	498.4	477.2	448.9	424.2	415.6	403.5	390.3
40°	629.2	575.7	536.3	488.8	464.1	431.2	409.5	396.9	376.2	371.7	367.6
42.5°	582.7	536.8	492.3	449.9	421.1	394.9	375.7	361.0	354.5	343.4	339.8
45°	535.8	493.3	447.9	414.6	381.8	359.5	346.4	333.8	326.2	323.2	317.1
47.5°	493.3	451.9	410.0	369.1	346.9	332.3	317.6	311.1	306.5	299.9	296.4
50°	452.9	407.0	367.6	341.9	318.1	305.0	295.4	289.3	282.3	275.2	265.1
52.5°	412.0	372.7	334.8	307.5	289.8	281.3	272.2	265.6	251.5	237.8	229.3
55°	370.6	330.2	299.4	278.7	266.1	257.0	246.4	227.2	214.1	206.5	202.5
57.5°	333.3	296.9	269.6	252.5	243.4	228.2	209.6	197.4	190.9	187.8	185.8
60°	293.4	262.1	239.4	226.2	212.1	191.9	181.8	175.7	173.7	172.7	171.2
62.5°	259.0	231.3	213.6	199.0	178.8	168.2	162.6	159.6	159.6	158.1	157.0
65°	222.7	201.0	185.8	164.6	154.0	149.5	147.4	145.9	144.4	143.9	141.9
67.5°	192.9	173.7	154.0	142.9	136.3	133.8	131.8	131.3	129.3	127.8	126.2
70°	162.6	143.9	127.8	122.7	119.2	118.2	116.1	114.1	112.6	110.6	109.6
72.5°	132.3	114.6	109.1	106.5	103.0	101.5	99.0	97.5	94.9	93.9	92.9
75°	101.0	93.9	90.9	88.9	86.3	82.8	81.8	80.3	79.3	77.8	76.2
77.5°	80.3	76.2	72.7	70.2	68.2	65.6	63.6	63.1	62.1	60.6	60.1
80°	60.1	57.1	55.5	53.0	50.5	49.0	48.0	47.5	46.0	45.4	44.9
82.5°	41.4	38.9	37.9	34.8	33.8	33.8	33.3	32.3	31.3	30.8	30.3
85°	23.2	22.2	20.7	21.2	19.7	19.7	19.2	18.7	18.2	17.7	17.2
87.5°	9.1	8.6	8.1	7.6	7.6	6.1	6.1	6.1	6.6	6.1	5.6
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: P242232

CATALOG NUMBER: S121RDR-S685D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1343.2	1343.2	1343.2	1343.2
2.5°	1301.3	1302.3	1298.8	1296.7
5°	1255.3	1253.8	1251.8	1250.3
7.5°	1208.4	1206.9	1206.9	1200.8
10°	1151.3	1147.3	1144.2	1139.2
12.5°	1078.6	1072.5	1070.5	1064.5
15°	941.2	928.6	920.0	935.2
17.5°	845.8	813.0	815.5	802.9
20°	747.8	734.7	741.3	722.1
22.5°	684.2	676.1	668.6	664.5
25°	625.1	615.5	603.9	608.0
27.5°	550.9	550.9	543.3	546.4
30°	513.0	509.0	496.4	498.9
32.5°	454.0	448.9	447.4	448.4
35°	425.7	417.6	415.1	412.0
37.5°	386.3	383.3	383.8	381.8
40°	360.0	357.5	354.5	355.5
42.5°	337.3	335.8	332.8	333.3
45°	315.1	313.6	312.1	312.1
47.5°	290.4	287.3	284.8	281.8
50°	258.0	252.0	247.4	245.4
52.5°	223.2	220.2	217.1	217.1
55°	201.0	199.5	198.4	197.9
57.5°	185.3	184.3	184.3	182.8
60°	171.2	171.2	170.7	171.7
62.5°	157.5	156.0	156.5	156.5
65°	141.9	141.4	140.9	140.4
67.5°	125.2	124.7	125.2	124.2
70°	108.6	108.6	108.1	107.1
72.5°	91.4	92.4	91.4	90.9
75°	75.2	74.7	75.2	73.7
77.5°	60.1	58.1	59.1	59.6
80°	44.4	44.4	43.9	43.4
82.5°	29.8	30.3	29.3	29.3
85°	17.2	17.2	16.2	17.2
87.5°	5.0	5.0	5.0	6.1
90°	0.0	0.0	0.0	0.0

(END OF REPORT)