

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: P243108

Luminaire Tested: **S121RDR-H880D940-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243108
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-67)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121RDR-H880D940-X4F0-XX-UDD-A-W
Description: DEFINE 1 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2510.1 lumens
Efficiency: N/A
Efficacy: 79.7 lumens/watt
Spacing Criteria (0/90/45): 0.89 / 1.21 / 1.07
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

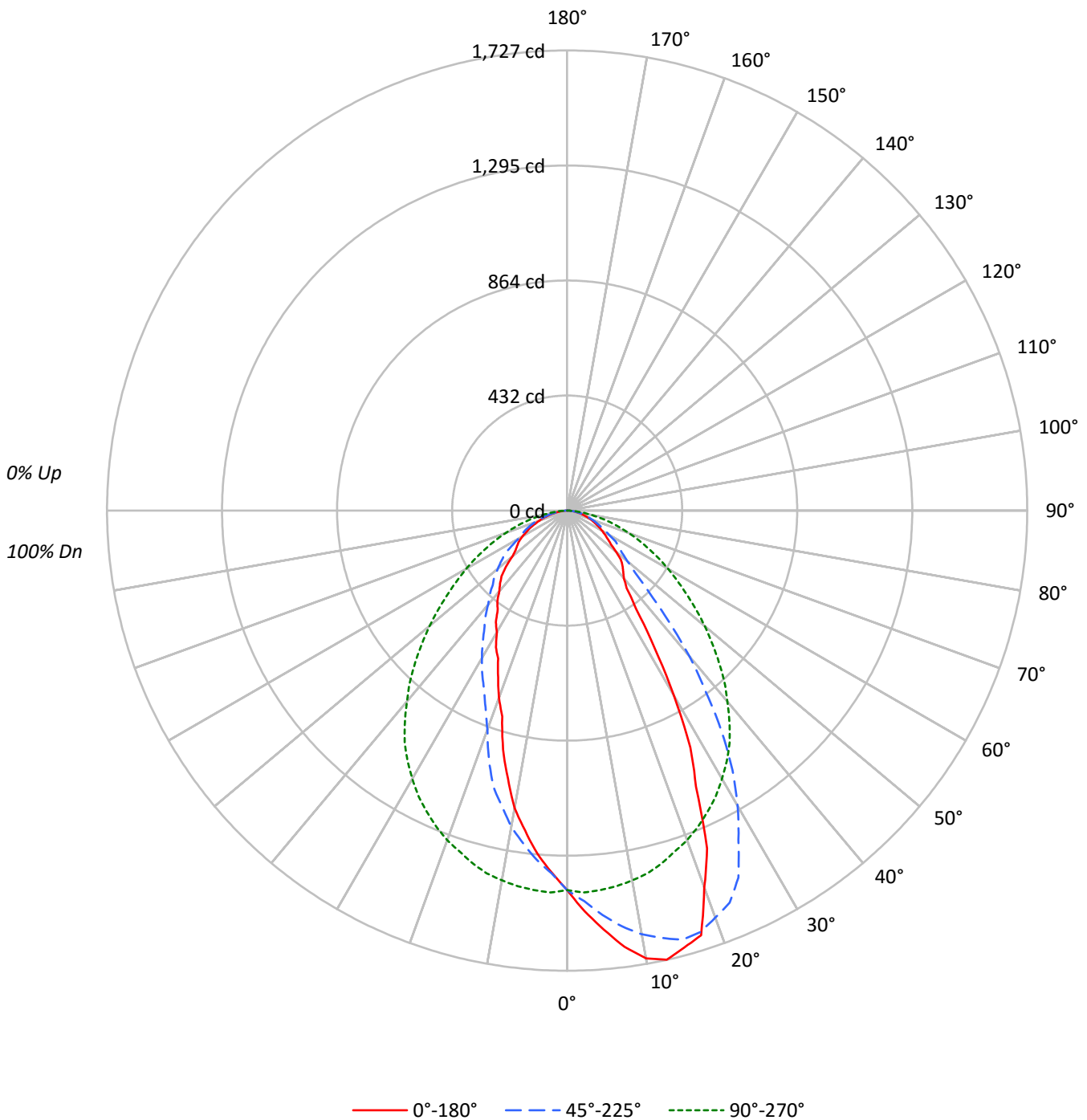
Input Watts (W): 31.5
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	111	107	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89	87
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76
3	94	85	78	73	92	84	77	72	81	75	71	78	73	70	76	72	68	66
4	87	77	69	63	85	76	69	63	73	67	62	71	66	61	69	64	61	59
5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54	52
6	76	64	56	50	74	63	55	50	61	55	50	60	54	49	58	53	49	47
7	71	59	51	45	69	58	50	45	56	50	45	55	49	44	54	48	44	42
8	66	54	46	41	65	53	46	41	52	46	41	51	45	41	50	44	40	39
9	62	50	43	38	61	50	42	38	49	42	37	48	42	37	47	41	37	35
10	59	47	39	35	58	46	39	35	45	39	34	44	38	34	44	38	34	33

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	42187	42187	42187
5°	46946	42523	38419
10°	51334	42401	34115
15°	52074	42046	28491
20°	47467	41508	23563
25°	37387	40755	20044
30°	27333	39770	18075
35°	16313	38450	16429
40°	12791	36176	15325
45°	12328	33769	14578
50°	10989	31059	12372
55°	9598	28262	11814
60°	8972	25867	11455
65°	8357	23529	10615
70°	7909	21207	9677
75°	7258	18866	8609
80°	6603	15306	7508
85°	6221	11695	5473



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	135.9	5.4
10°-20°	379.2	15.1
20°-30°	504.2	20.1
30°-40°	480.9	19.2
40°-50°	399.1	15.9
50°-60°	296.8	11.8
60°-70°	192.2	7.7
70°-80°	97.8	3.9
80°-90°	23.9	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°	1019.3	40.6
0°-40°	1500.2	59.8
0°-60°	2196.2	87.5
0°-90°	2510.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2510.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1424	1424	1424	1424	1424	
5°	1578	1523	1430	1316	1292	155
15°	1698	1668	1371	1072	929	472
25°	1144	1520	1247	738	613	531
35°	451	1010	1063	542	454	307
45°	294	435	806	395	348	224
55°	186	236	547	285	229	169
65°	119	135	336	172	151	119
75°	63	69	165	85	75	67
85°	18	18	34	18	16	20
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°	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8
2.5°	1505.4	1501.7	1506.0	1504.4	1497.4	1499.0	1490.4	1485.0	1472.1	1467.3	1467.3
5°	1578.4	1583.8	1580.6	1581.7	1574.7	1570.4	1561.3	1551.1	1535.0	1523.1	1518.9
7.5°	1651.5	1653.1	1654.7	1650.4	1642.3	1634.8	1621.9	1606.9	1589.2	1574.1	1562.3
10°	1706.2	1710.0	1707.8	1701.4	1695.5	1684.2	1670.3	1654.1	1634.8	1615.0	1600.5
12.5°	1726.6	1729.8	1734.7	1730.9	1730.4	1725.0	1711.1	1691.2	1667.6	1642.9	1626.2
15°	1697.6	1695.5	1708.4	1705.1	1704.1	1701.9	1705.7	1701.4	1689.0	1667.6	1647.2
17.5°	1670.8	1669.7	1682.6	1685.8	1681.0	1674.0	1669.7	1664.3	1658.4	1659.0	1656.3
20°	1505.4	1538.2	1544.6	1561.8	1598.3	1622.5	1646.6	1645.6	1628.4	1625.7	1624.6
22.5°	1372.3	1384.6	1378.7	1406.6	1426.5	1470.0	1512.4	1566.1	1602.1	1592.9	1587.0
25°	1143.6	1182.2	1199.9	1234.8	1285.3	1340.6	1364.8	1421.7	1477.0	1519.9	1552.7
27.5°	1001.8	1010.4	1021.7	1057.7	1076.5	1126.9	1217.1	1294.4	1346.0	1392.7	1479.1
30°	798.9	802.6	841.8	861.7	917.0	966.4	1044.8	1107.1	1210.7	1279.9	1346.5
32.5°	609.9	606.7	649.6	672.7	727.5	794.1	881.6	939.6	1041.0	1154.3	1233.8
35°	451.0	450.4	473.5	489.6	549.8	600.8	711.9	787.6	898.7	1009.9	1112.4
37.5°	367.2	366.7	371.5	385.5	410.7	468.2	521.9	634.1	742.5	852.0	980.4
40°	330.7	333.4	334.5	340.9	349.5	366.7	399.4	477.8	584.1	714.6	843.4
42.5°	311.4	311.4	312.5	314.1	318.4	323.2	343.1	373.1	458.5	562.7	707.1
45°	294.2	294.8	295.8	296.9	295.8	298.5	307.6	320.0	353.3	435.4	575.0
47.5°	273.8	273.3	276.0	277.6	279.7	282.9	283.5	289.9	304.4	347.4	448.8
50°	238.4	238.9	241.6	248.0	255.0	260.9	264.7	269.0	273.8	294.2	347.9
52.5°	206.2	206.7	208.3	213.1	219.6	227.1	238.9	248.6	252.3	258.8	288.8
55°	185.8	185.8	187.9	190.6	192.2	197.6	205.6	216.4	230.3	235.7	248.6
57.5°	168.6	168.6	169.7	169.7	171.8	174.5	179.9	185.2	197.0	214.2	222.3
60°	151.4	151.4	152.5	152.5	155.2	156.2	160.0	163.2	169.7	181.5	197.6
62.5°	135.3	134.2	135.3	135.8	137.4	139.1	141.7	145.5	149.3	156.2	168.0
65°	119.2	118.7	119.7	120.8	121.9	124.0	125.6	128.3	131.5	135.3	141.2
67.5°	105.2	104.7	105.2	106.8	106.3	107.4	110.1	111.1	114.4	118.1	122.9
70°	91.3	90.2	91.3	91.3	91.8	93.4	93.4	96.1	98.8	100.9	105.2
72.5°	76.2	76.8	76.2	76.8	77.8	78.4	79.5	81.1	82.7	84.8	87.5
75°	63.4	63.4	63.9	64.4	65.5	65.5	66.0	67.1	68.2	69.3	72.5
77.5°	50.5	51.0	51.5	52.1	52.1	52.6	53.2	53.7	55.3	55.8	57.4
80°	38.7	39.2	39.2	39.2	40.3	39.2	40.3	41.3	41.3	41.9	43.0
82.5°	27.9	28.5	27.9	28.5	29.0	29.0	28.5	29.0	29.0	30.1	30.1
85°	18.3	17.2	17.2	17.2	17.2	17.2	17.7	18.3	17.7	17.7	18.3
87.5°	7.5	7.5	7.5	7.5	8.1	7.5	8.1	8.1	8.1	7.5	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°	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8
2.5°	1470.0	1465.7	1461.9	1455.5	1447.4	1435.6	1434.0	1434.6	1420.1	1406.1	1404.0
5°	1509.7	1502.7	1490.9	1477.0	1464.1	1444.2	1435.6	1429.7	1407.7	1388.9	1381.4
7.5°	1552.1	1535.5	1519.4	1497.4	1475.9	1450.1	1434.0	1421.7	1392.7	1368.0	1355.1
10°	1585.4	1565.0	1541.9	1514.0	1484.5	1452.8	1428.7	1409.3	1374.4	1343.8	1327.7
12.5°	1609.0	1586.0	1558.6	1525.3	1491.5	1449.6	1420.1	1394.3	1351.9	1315.4	1296.0
15°	1621.4	1596.7	1562.9	1526.4	1491.5	1447.4	1408.3	1370.7	1328.8	1283.2	1259.0
17.5°	1632.7	1600.5	1562.3	1520.5	1485.0	1438.9	1390.5	1341.7	1294.4	1251.5	1212.3
20°	1624.6	1597.2	1554.8	1511.3	1471.6	1417.9	1366.9	1316.4	1257.4	1207.5	1168.3
22.5°	1587.0	1582.2	1536.6	1489.9	1444.2	1392.7	1333.6	1283.7	1220.3	1161.3	1114.0
25°	1543.0	1537.1	1512.4	1462.5	1410.9	1357.2	1304.1	1246.6	1173.6	1112.4	1058.2
27.5°	1506.0	1492.5	1474.8	1428.1	1372.8	1319.1	1264.4	1208.5	1130.7	1062.5	1000.8
30°	1430.8	1443.7	1423.8	1391.6	1327.7	1275.6	1223.0	1162.4	1085.0	1006.7	943.3
32.5°	1311.6	1389.5	1369.6	1343.8	1281.0	1224.1	1174.2	1114.6	1029.2	951.9	886.4
35°	1206.4	1273.5	1318.6	1287.5	1232.2	1166.1	1115.1	1063.0	973.9	895.0	832.2
37.5°	1104.4	1175.8	1250.9	1222.5	1176.9	1106.0	1052.3	1000.8	918.1	838.6	775.8
40°	970.7	1074.8	1147.3	1158.6	1111.9	1040.5	988.4	935.3	862.2	783.3	716.2
42.5°	842.4	976.1	1034.6	1092.6	1044.8	977.7	919.7	874.6	804.3	735.0	662.0
45°	708.2	860.1	946.5	991.1	973.9	912.7	849.4	805.9	746.8	682.4	613.1
47.5°	591.6	736.1	859.6	884.8	901.4	841.3	782.2	738.2	687.2	634.1	568.0
50°	469.2	619.0	751.1	796.7	828.4	773.7	711.9	673.8	630.8	583.1	524.5
52.5°	365.1	505.2	643.7	721.6	732.3	703.9	646.9	609.4	575.0	532.1	478.9
55°	289.9	398.4	536.9	627.6	637.8	630.8	579.8	547.1	521.9	485.9	441.3
57.5°	240.5	309.8	434.9	539.6	554.6	561.0	519.2	489.6	467.1	438.6	398.4
60°	207.8	244.3	339.8	442.4	483.7	495.0	458.0	436.5	417.7	391.9	354.3
62.5°	183.6	200.3	259.9	358.6	411.8	421.5	402.7	386.6	371.0	346.3	313.0
65°	153.0	170.7	200.3	277.0	342.5	347.4	351.1	335.6	323.2	302.8	273.3
67.5°	128.3	142.3	161.6	212.6	274.9	288.8	298.5	291.5	279.7	259.3	234.1
70°	109.0	117.0	131.0	159.5	209.9	240.0	250.2	244.8	238.9	216.9	195.4
72.5°	90.7	97.2	105.2	122.4	158.4	190.6	205.6	202.9	196.5	179.9	162.1
75°	75.2	77.8	84.3	94.0	114.9	145.0	162.7	164.8	157.3	141.7	127.8
77.5°	59.1	61.7	65.5	71.4	84.8	105.2	119.7	125.1	120.3	109.0	95.0
80°	45.1	46.7	49.4	52.1	57.4	71.4	86.4	89.7	87.0	77.8	69.3
82.5°	30.1	31.1	33.3	35.4	38.1	44.6	57.4	59.6	59.1	51.0	45.1
85°	18.3	18.3	18.8	20.4	21.5	24.2	31.1	34.4	32.8	27.4	24.7
87.5°	7.5	8.1	7.5	7.5	7.5	8.1	10.2	14.0	10.7	8.1	7.5
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°	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8	1423.8
2.5°	1398.1	1395.9	1387.8	1380.3	1371.7	1361.5	1362.1	1363.7	1359.9	1358.9	1362.6
5°	1370.7	1363.2	1350.8	1338.5	1328.8	1315.9	1308.4	1312.1	1309.5	1304.6	1301.4
7.5°	1341.7	1330.9	1313.2	1297.7	1284.8	1260.6	1255.2	1248.8	1243.4	1232.7	1230.5
10°	1307.3	1291.7	1269.2	1247.2	1223.6	1204.8	1187.1	1179.5	1165.0	1155.4	1152.7
12.5°	1271.9	1246.1	1220.9	1188.7	1161.8	1134.4	1118.9	1108.1	1093.6	1070.0	1058.7
15°	1235.4	1196.2	1162.4	1126.9	1108.7	1071.6	1042.1	1008.8	991.1	951.4	928.3
17.5°	1186.5	1141.4	1095.8	1066.8	1028.7	977.1	927.7	910.6	883.7	857.9	832.2
20°	1120.5	1079.1	1035.7	992.2	934.2	874.6	855.8	826.3	796.7	781.2	767.7
22.5°	1059.8	1015.3	963.7	906.3	846.7	800.0	775.3	753.8	735.5	721.6	706.0
25°	1002.4	956.2	882.6	824.1	772.0	737.7	725.3	697.4	678.1	667.9	654.5
27.5°	939.0	875.7	816.6	755.9	709.8	690.4	662.0	640.0	619.6	599.7	594.9
30°	878.9	808.6	750.0	700.6	666.8	640.0	611.0	585.2	571.8	564.3	551.9
32.5°	819.3	747.9	693.1	654.5	618.0	589.5	562.1	548.7	528.3	511.7	500.9
35°	755.4	693.1	649.6	604.5	569.6	541.7	527.8	497.2	485.9	481.0	469.8
37.5°	699.0	643.7	599.7	565.3	527.2	504.7	477.3	470.3	455.3	442.4	438.6
40°	652.3	600.2	558.9	514.3	490.7	461.2	447.8	429.0	423.6	418.8	410.2
42.5°	601.3	556.8	509.5	479.4	444.5	431.1	410.2	404.8	391.9	387.1	383.9
45°	557.8	516.5	471.4	434.9	415.0	395.1	387.1	373.7	367.8	361.9	356.0
47.5°	515.4	472.5	436.5	402.1	380.1	371.0	356.5	346.8	340.4	334.5	328.6
50°	476.2	432.7	392.5	367.8	352.2	339.3	330.2	322.1	313.0	300.1	286.7
52.5°	433.8	394.6	361.9	337.7	323.7	311.4	303.3	289.4	271.7	257.7	251.3
55°	391.4	354.3	325.9	306.6	296.9	285.1	266.8	246.4	235.2	233.0	231.4
57.5°	355.4	320.5	294.2	279.2	267.9	247.0	227.6	220.1	216.9	215.8	214.8
60°	315.2	284.0	265.2	249.1	230.3	210.5	204.6	203.5	200.3	198.6	197.6
62.5°	278.1	251.3	234.1	214.8	194.9	191.1	186.8	184.2	182.5	178.8	177.2
65°	242.1	220.7	201.9	181.5	174.5	171.8	168.0	164.3	160.0	157.3	155.2
67.5°	207.8	186.8	167.0	159.5	155.7	151.4	146.6	141.2	139.1	135.3	134.8
70°	174.0	154.6	143.9	139.1	132.1	128.3	122.9	120.8	117.0	115.4	113.8
72.5°	141.7	127.8	123.5	116.5	111.7	105.8	103.1	100.9	98.8	96.1	96.1
75°	110.6	106.8	98.8	93.4	88.6	85.4	84.3	80.5	80.0	78.4	77.3
77.5°	88.0	80.5	77.8	71.9	68.7	67.1	66.0	63.9	61.7	61.2	60.7
80°	62.3	58.5	55.3	52.6	49.9	48.9	47.8	47.2	46.2	45.1	44.6
82.5°	40.8	38.7	36.5	34.9	34.4	32.8	31.7	31.1	30.1	30.1	30.1
85°	22.0	21.5	20.4	19.3	18.3	18.3	17.7	17.2	17.2	15.6	15.6
87.5°	7.0	7.0	6.4	6.4	5.4	5.9	5.4	5.4	4.8	5.4	5.4
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: P243108

CATALOG NUMBER: S121RDR-H880D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1423.8	1423.8	1423.8	1423.8
2.5°	1358.3	1358.3	1356.2	1358.3
5°	1299.3	1294.4	1292.8	1291.7
7.5°	1224.1	1219.8	1215.5	1211.2
10°	1147.3	1140.9	1137.1	1133.9
12.5°	1047.5	1039.4	1024.4	1028.7
15°	924.5	925.1	890.2	928.8
17.5°	824.1	826.8	812.8	810.7
20°	760.2	759.2	753.8	747.3
22.5°	694.7	689.9	687.8	677.5
25°	633.5	624.9	627.6	613.1
27.5°	589.0	582.0	579.8	578.8
30°	544.4	529.9	525.1	528.3
32.5°	499.3	498.2	496.6	497.2
35°	461.2	459.0	454.2	454.2
37.5°	434.9	435.4	432.7	430.6
40°	402.7	400.0	399.4	396.2
42.5°	379.6	374.2	372.1	372.6
45°	352.7	349.5	346.8	347.9
47.5°	321.1	317.8	311.9	310.3
50°	278.1	273.8	271.1	268.4
52.5°	245.9	245.4	244.3	243.7
55°	230.3	228.7	228.7	228.7
57.5°	214.2	213.1	212.6	213.7
60°	196.5	195.4	193.3	193.3
62.5°	174.5	173.4	172.9	170.7
65°	152.5	151.9	150.9	151.4
67.5°	132.1	131.5	131.5	129.9
70°	112.2	112.2	110.6	111.7
72.5°	94.0	93.4	93.4	93.4
75°	76.2	75.7	75.2	75.2
77.5°	60.1	60.1	59.1	59.1
80°	43.5	43.5	43.0	44.0
82.5°	29.0	30.1	29.0	29.0
85°	15.6	16.1	16.1	16.1
87.5°	4.8	4.3	4.3	4.3
90°	0.0	0.0	0.0	0.0

(END OF REPORT)