

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P243403

Luminaire Tested: S123RDRP-H1165D840-X4F0-XX-UDD-F-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P243403  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-64)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S123RDRP-H1165D840-X4F0-XX-UDD-F-W  
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH SATIN FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 4000K CCT, 80 CRI LEDS  
Ballast/Driver: -

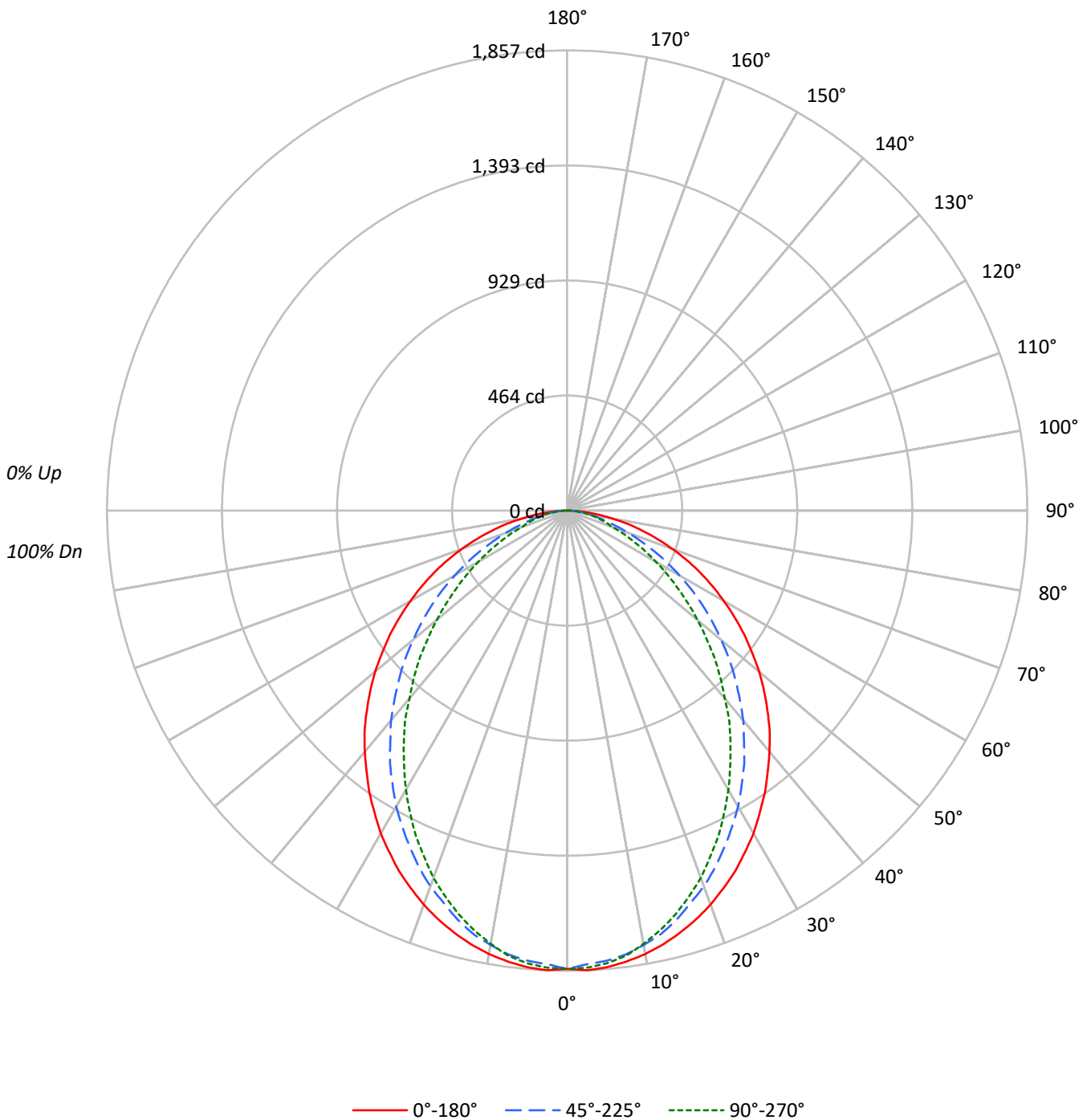
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4175.8 lumens  
Efficiency: N/A  
Efficacy: 110.8 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.07 / 1.22  
Luminous Opening: Rectangular (W 0.23' x L: 3.88' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 37.7  
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: 24 FT

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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	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	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	110	105	101	98	107	103	99	96	99	96	93	95	93	90	91	89	88	86																												
2	101	93	87	81	98	91	85	80	87	83	78	84	80	77	81	78	75	73																												
3	92	82	75	69	90	81	74	68	78	72	67	75	70	66	73	68	65	62																												
4	85	73	65	59	83	72	64	58	70	63	58	67	62	57	65	60	56	54																												
5	78	66	58	51	76	65	57	51	63	56	50	61	55	50	59	54	49	47																												
6	73	60	51	45	71	59	51	45	57	50	45	56	49	44	54	48	44	42																												
7	67	55	46	40	66	54	46	40	52	45	40	51	44	40	49	44	39	37																												
8	63	50	42	36	61	49	41	36	48	41	36	47	40	36	46	40	35	34																												
9	59	46	38	33	58	45	38	33	44	37	32	43	37	32	42	36	32	30																												
10	55	43	35	30	54	42	35	30	41	34	30	40	34	30	39	34	29	28																												

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

	0°	45°	90°
0°	22418	22418	22418
5°	22504	22192	22314
10°	22362	21907	21854
15°	22121	21445	21176
20°	21823	20815	20338
25°	21468	20061	19341
30°	21055	19305	18212
35°	20579	18434	17005
40°	20094	17486	15666
45°	19602	16436	14415
50°	19072	15295	12964
55°	18432	14108	11496
60°	17699	12708	10022
65°	16988	11123	8556
70°	16008	9314	6847
75°	14766	7386	6519
80°	12893	6548	5947
85°	10862	5730	5535

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 19602 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	174.0	4.2
10°-20°	484.4	11.6
20°-30°	697.3	16.7
30°-40°	785.5	18.8
40°-50°	750.4	18.0
50°-60°	613.6	14.7
60°-70°	412.0	9.9
70°-80°	205.5	4.9
80°-90°	53.1	1.3
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°	1355.7	32.5
0°-40°	2141.2	51.3
0°-60°	3505.1	83.9
0°-90°	4175.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4175.8	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1850	1850	1850	1850	1850	
5°	1850	1842	1824	1838	1834	175
15°	1763	1750	1709	1699	1688	497
25°	1605	1570	1500	1467	1446	739
35°	1391	1337	1246	1176	1149	869
45°	1144	1075	959	875	841	883
55°	872	794	668	575	544	779
65°	592	510	388	317	298	586
75°	315	240	158	142	139	334
85°	78	46	41	38	40	91
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5
2.5°	1856.6	1852.3	1846.6	1848.1	1849.5	1850.9	1850.9	1849.5	1845.2	1839.5	1832.4
5°	1849.5	1845.2	1839.5	1839.5	1842.4	1842.4	1842.4	1841.0	1836.7	1831.0	1823.9
7.5°	1835.3	1832.4	1825.3	1826.8	1828.2	1828.2	1828.2	1826.8	1821.1	1814.0	1806.9
10°	1816.8	1812.5	1806.9	1806.9	1808.3	1808.3	1808.3	1805.4	1798.3	1789.8	1779.9
12.5°	1792.7	1788.4	1782.7	1782.7	1782.7	1782.7	1782.7	1778.5	1767.1	1758.6	1750.0
15°	1762.8	1758.6	1752.9	1752.9	1751.5	1750.0	1747.2	1740.1	1730.2	1720.2	1708.9
17.5°	1730.2	1724.5	1717.4	1716.0	1714.5	1713.1	1708.9	1704.6	1690.4	1676.2	1659.1
20°	1691.8	1686.1	1679.0	1677.6	1673.3	1669.1	1666.2	1657.7	1642.1	1625.0	1613.7
22.5°	1649.2	1643.5	1636.4	1633.6	1625.0	1622.2	1617.9	1605.2	1588.1	1572.5	1559.7
25°	1605.2	1598.1	1589.5	1585.3	1575.3	1569.6	1568.2	1549.8	1532.7	1515.7	1500.0
27.5°	1554.0	1548.3	1541.2	1532.7	1522.8	1515.7	1512.8	1495.8	1474.5	1454.6	1440.4
30°	1504.3	1495.8	1488.7	1478.7	1464.5	1457.4	1451.7	1434.7	1416.2	1392.1	1379.3
32.5°	1446.1	1440.4	1431.9	1421.9	1407.7	1402.0	1393.5	1372.2	1348.0	1331.0	1311.1
35°	1390.7	1385.0	1372.2	1362.3	1342.4	1336.7	1328.2	1309.7	1282.7	1262.8	1245.8
37.5°	1329.6	1322.5	1312.5	1298.3	1281.3	1274.2	1262.8	1244.4	1213.1	1193.2	1171.9
40°	1269.9	1260.0	1248.6	1233.0	1215.9	1208.8	1198.9	1171.9	1146.3	1123.6	1105.1
42.5°	1210.3	1198.9	1184.7	1170.5	1152.0	1142.1	1130.7	1105.1	1076.7	1055.4	1029.9
45°	1143.5	1135.0	1120.8	1103.7	1082.4	1075.3	1062.5	1035.5	1007.1	984.4	958.8
47.5°	1078.2	1068.2	1054.0	1037.0	1015.7	1005.7	992.9	965.9	937.5	909.1	886.4
50°	1011.4	1001.4	984.4	967.4	947.5	934.7	923.3	896.3	865.1	839.5	811.1
52.5°	940.4	931.8	917.6	900.6	875.0	865.1	853.7	823.9	794.1	764.2	738.7
55°	872.2	866.5	849.5	832.4	805.4	794.1	782.7	751.4	721.6	691.8	667.6
57.5°	801.2	796.9	779.8	760.0	735.8	724.5	710.2	679.0	650.6	620.8	595.2
60°	730.1	725.9	708.8	688.9	666.2	652.0	636.4	612.2	579.6	552.6	524.2
62.5°	661.9	656.3	642.1	620.8	595.2	581.0	566.8	538.4	508.5	480.1	454.6
65°	592.3	585.2	568.2	546.9	522.7	510.0	495.8	468.8	438.9	411.9	387.8
67.5°	522.7	515.6	497.2	480.1	451.7	438.9	426.1	399.2	370.7	343.8	321.0
70°	451.7	444.6	430.4	407.7	383.5	370.7	358.0	329.6	304.0	284.1	262.8
72.5°	382.1	376.4	362.2	340.9	318.2	305.4	291.2	267.1	244.3	223.0	207.4
75°	315.3	306.8	294.0	274.2	251.4	240.1	230.1	206.0	184.7	170.5	157.7
77.5°	251.4	241.5	227.3	211.7	190.3	179.0	169.0	149.2	134.9	125.0	122.2
80°	184.7	183.2	169.0	152.0	133.5	125.0	115.1	102.3	98.0	96.6	93.8
82.5°	129.3	123.6	112.2	96.6	82.4	76.7	73.9	71.0	68.2	68.2	65.3
85°	78.1	72.4	62.5	49.7	46.9	45.5	44.0	44.0	42.6	41.2	41.2
87.5°	34.1	28.4	21.3	19.9	18.5	18.5	19.9	19.9	19.9	18.5	18.5
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°
0°	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5	1849.5
2.5°	1835.3	1842.4	1846.6	1848.1	1848.1	1848.1	1849.5	1849.5	1848.1	1846.6
5°	1825.3	1832.4	1835.3	1838.1	1838.1	1838.1	1838.1	1838.1	1836.7	1833.9
7.5°	1809.7	1814.0	1818.2	1816.8	1816.8	1815.4	1814.0	1815.4	1812.5	1812.5
10°	1781.3	1785.6	1788.4	1784.1	1784.1	1785.6	1785.6	1784.1	1779.9	1775.6
12.5°	1748.6	1752.9	1748.6	1750.0	1747.2	1744.4	1742.9	1741.5	1737.3	1734.4
15°	1706.0	1706.0	1703.2	1703.2	1698.9	1693.2	1691.8	1693.2	1687.5	1687.5
17.5°	1659.1	1656.3	1652.0	1649.2	1647.8	1647.8	1642.1	1642.1	1635.0	1633.6
20°	1608.0	1605.2	1600.9	1593.8	1591.0	1592.4	1586.7	1582.4	1578.2	1576.7
22.5°	1554.0	1546.9	1542.7	1535.6	1529.9	1529.9	1525.6	1518.5	1514.2	1510.0
25°	1492.9	1485.8	1477.3	1471.6	1467.4	1460.3	1457.4	1451.7	1447.5	1446.1
27.5°	1430.4	1419.1	1407.7	1402.0	1399.2	1390.7	1386.4	1383.6	1375.0	1373.6
30°	1363.7	1355.1	1340.9	1331.0	1323.9	1325.3	1315.4	1309.7	1305.4	1301.2
32.5°	1299.7	1285.5	1271.3	1258.6	1250.0	1248.6	1238.7	1233.0	1228.7	1224.5
35°	1227.3	1213.1	1196.1	1184.7	1176.2	1171.9	1162.0	1159.1	1152.0	1149.2
37.5°	1154.9	1139.2	1122.2	1108.0	1102.3	1092.4	1088.1	1081.0	1075.3	1075.3
40°	1083.8	1065.4	1048.3	1031.3	1024.2	1018.5	1007.1	1001.4	994.3	990.1
42.5°	1010.0	988.7	973.0	957.4	947.5	943.2	930.4	923.3	916.2	914.8
45°	936.1	914.8	894.9	879.3	875.0	866.5	853.7	843.8	842.4	840.9
47.5°	860.8	839.5	821.0	804.0	798.3	788.4	779.8	772.7	764.2	760.0
50°	788.4	767.1	747.2	728.7	721.6	713.1	704.6	694.6	691.8	687.5
52.5°	715.9	691.8	670.5	653.4	647.7	640.6	630.7	622.2	617.9	615.1
55°	642.1	617.9	599.4	582.4	575.3	571.0	559.7	552.6	546.9	544.0
57.5°	569.6	545.5	528.4	515.6	505.7	501.4	490.1	483.0	480.1	478.7
60°	501.4	478.7	460.2	447.5	438.9	434.7	426.1	419.0	414.8	413.4
62.5°	433.2	413.4	396.3	383.5	377.9	372.2	365.1	359.4	355.1	355.1
65°	367.9	348.0	332.4	322.5	316.8	313.9	305.4	302.6	298.3	298.3
67.5°	304.0	289.8	278.4	265.6	261.4	261.4	252.8	250.0	247.2	247.2
70°	248.6	235.8	223.0	215.9	211.7	210.2	203.1	198.9	196.0	193.2
72.5°	194.6	183.2	171.9	170.5	170.5	169.0	169.0	166.2	166.2	167.6
75°	149.2	146.3	143.5	143.5	142.0	140.6	140.6	139.2	139.2	139.2
77.5°	119.3	117.9	116.5	115.1	115.1	113.6	112.2	112.2	112.2	112.2
80°	90.9	89.5	89.5	88.1	86.6	88.1	86.6	86.6	85.2	85.2
82.5°	63.9	63.9	63.9	62.5	62.5	62.5	62.5	61.1	61.1	62.5
85°	39.8	39.8	39.8	39.8	38.4	39.8	38.4	38.4	38.4	39.8
87.5°	17.0	18.5	17.0	18.5	18.5	17.0	17.0	17.0	17.0	17.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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**CIE UGR TABLE:**

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	22.33	23.88	22.69	24.20	24.51	19.52	21.08	19.89	21.39	21.70
	3H	24.16	25.55	24.53	25.88	26.24	20.60	21.99	20.97	22.32	22.68
	4H	24.84	26.15	25.24	26.50	26.88	20.99	22.31	21.39	22.65	23.03
	6H	25.34	26.55	25.75	26.92	27.31	21.32	22.53	21.73	22.89	23.29
	8H	25.50	26.65	25.92	27.04	27.44	21.42	22.58	21.85	22.97	23.37
	12H	25.60	26.70	26.03	27.08	27.51	21.50	22.61	21.93	22.99	23.42
4H	2H	22.57	23.88	22.97	24.23	24.61	20.24	21.55	20.64	21.90	22.28
	3H	24.56	25.65	24.97	26.05	26.45	21.46	22.55	21.87	22.95	23.35
	4H	25.35	26.33	25.78	26.75	27.18	21.95	22.93	22.38	23.35	23.78
	6H	25.97	26.82	26.42	27.26	27.72	22.37	23.23	22.83	23.67	24.13
	8H	26.17	26.97	26.63	27.41	27.88	22.52	23.31	22.98	23.76	24.22
	12H	26.31	27.03	26.80	27.51	27.98	22.63	23.34	23.11	23.82	24.29
8H	4H	25.39	26.19	25.85	26.63	27.10	22.27	23.07	22.73	23.51	23.98
	6H	26.05	26.71	26.55	27.20	27.68	22.78	23.44	23.28	23.93	24.41
	8H	26.29	26.89	26.81	27.40	27.88	22.99	23.58	23.50	24.09	24.58
	12H	26.49	27.01	26.99	27.50	28.07	23.16	23.69	23.67	24.18	24.74
12H	4H	25.37	26.09	25.86	26.57	27.04	22.31	23.02	22.79	23.50	23.97
	6H	26.04	26.63	26.55	27.14	27.63	22.84	23.43	23.35	23.94	24.43
	8H	26.31	26.84	26.82	27.33	27.89	23.09	23.62	23.60	24.11	24.67