

Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P646640

Luminaire Tested: S123DR-S560D830-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

Test Information

Test Method: LM-79-2019
Report Number: P646640
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2301-905-1)
Test Lab: INNOVATION CENTER
Issue Date: 3/20/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: S123DR-S560D830-X4F0-XX-UDD-G-W
Description: DEFINE 3 DIRECT RECESSED WITH WALL GRAZE FLUSH OPTIC
STANDARD LIGHT ENGINE
Light Source: 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2343.3 lumens
Efficiency: N/A
Efficacy: 126.0 lumens/watt
Spacing Criteria (0/90/45): 0.65 / 1.19 / 0.89
Luminous Opening: Rectangular (W 4' x L: 0.22' x H: 0')
CIE Type: Direct

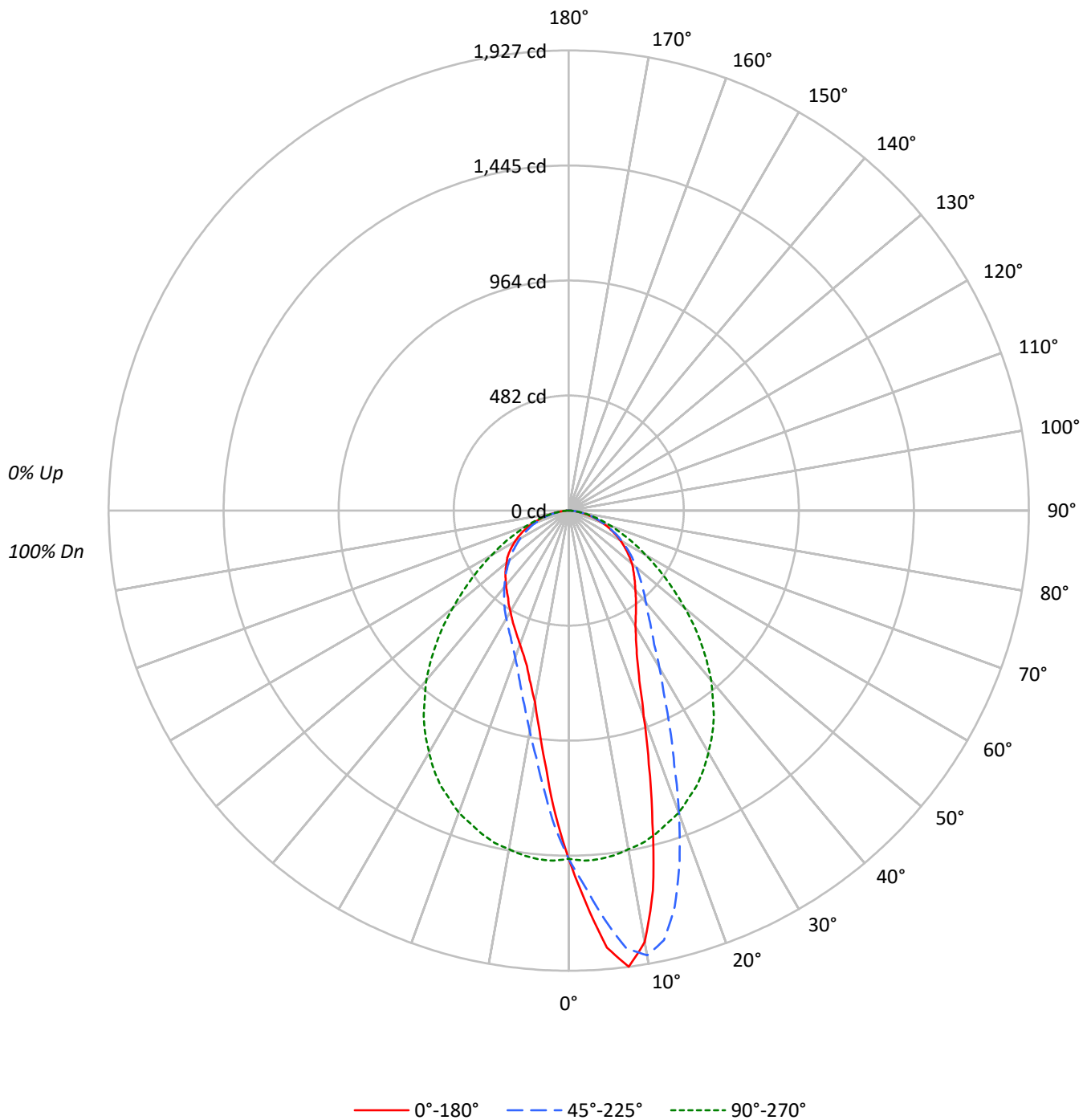
Input Watts (W): 18.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot



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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20					20					20					20
RC	80				70					50					30					10
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100		
1	110	106	102	98	107	103	100	97	99	96	94	95	93	91	92	90	88	86		
2	101	94	88	82	99	92	86	82	88	84	80	85	81	78	82	79	76	74		
3	93	84	76	70	91	82	75	70	79	73	69	77	72	67	74	70	66	64		
4	86	75	67	61	84	74	67	61	72	65	60	69	64	59	67	62	58	56		
5	80	68	60	54	78	67	59	54	65	58	53	63	57	52	61	56	52	50		
6	74	62	54	48	73	61	53	48	60	53	47	58	52	47	56	51	47	45		
7	70	57	49	43	68	56	49	43	55	48	43	53	47	43	52	47	42	40		
8	65	53	45	39	64	52	44	39	51	44	39	49	43	39	48	43	39	37		
9	61	49	41	36	60	48	41	36	47	40	36	46	40	36	45	40	35	34		
10	58	45	38	33	57	45	38	33	44	37	33	43	37	33	42	37	33	31		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	17573	17573	17573	17573	17573
5°	22224	20783	17730	14219	13129
10°	22439	23135	17612	11485	9953
15°	16901	21410	17493	9624	8416
20°	11776	17313	17269	8391	7645
25°	8979	13280	16888	7692	7171
30°	7768	10556	16280	7270	6790
35°	7208	8840	15579	6928	6521
40°	6823	7909	14595	6611	6430
45°	6596	7346	13342	6330	6388
50°	6482	6939	11862	6088	6356
55°	6241	6554	10407	5871	6384
60°	6017	6198	8969	5658	6280
65°	5654	5808	7738	5423	6155
70°	5221	5390	6581	5126	5795
75°	4725	4884	5638	4693	5293
80°	3900	4177	4462	4087	4462
85°	3083	3373	3276	3553	3553

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 80°

Vertical Angle: 45°

Luminance: 15234 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	137.9	5.9
10°-20°	343.1	14.6
20°-30°	406.1	17.3
30°-40°	408.1	17.4
40°-50°	374.3	16.0
50°-60°	308.9	13.2
60°-70°	218.6	9.3
70°-80°	116.7	5.0
80°-90°	29.6	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°	887.0	37.9
0°-40°	1295.2	55.3
0°-60°	1978.3	84.4
0°-90°	2343.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2343.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1458	1458	1458	1458	1458	
5°	1837	1718	1466	1176	1086	175
15°	1355	1716	1402	772	675	374
25°	675	999	1270	579	539	319
35°	490	601	1059	471	443	308
45°	387	431	783	372	375	300
55°	297	312	495	280	304	266
65°	198	204	271	190	216	197
75°	102	105	121	101	114	107
85°	22	24	24	26	26	26
90°	0	0	0	0	0	

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CANDELA DISTRIBUTION (FULL):

	0°	10°	20°	22.5°	30°	40°	45°	50°	60°	67.5°	70°
0°	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4
2.5°	1643.9	1640.5	1623.6	1612.7	1615.5	1591.1	1576.2	1564.0	1555.9	1536.3	1526.1
5°	1837.4	1846.9	1836.1	1830.7	1802.9	1758.9	1718.3	1709.5	1671.6	1624.9	1608.7
7.5°	1926.8	1932.2	1925.4	1925.4	1916.6	1877.4	1848.9	1826.6	1761.6	1701.4	1673.7
10°	1834.0	1846.2	1872.6	1884.8	1902.4	1897.0	1890.9	1882.1	1838.1	1768.4	1736.6
12.5°	1630.3	1645.2	1698.0	1705.5	1765.7	1823.9	1842.8	1864.5	1868.6	1809.7	1775.2
15°	1354.9	1396.2	1444.2	1467.2	1543.7	1666.2	1716.3	1775.2	1844.9	1820.5	1793.4
17.5°	1116.0	1131.6	1183.0	1231.7	1308.2	1449.6	1542.4	1630.3	1779.9	1804.3	1787.4
20°	918.4	932.6	1000.3	996.9	1098.4	1257.4	1350.2	1451.7	1672.3	1751.5	1748.1
22.5°	771.5	793.9	831.8	852.7	925.8	1067.3	1155.2	1281.8	1549.8	1675.0	1688.5
25°	675.4	691.7	714.7	732.9	789.8	906.2	998.9	1103.1	1395.5	1574.8	1608.7
27.5°	609.8	616.5	639.5	650.4	688.3	788.4	860.2	955.6	1252.7	1462.5	1509.9
30°	558.3	563.1	583.4	586.8	616.5	689.0	758.7	836.5	1113.3	1346.8	1400.9
32.5°	522.5	525.9	541.4	542.8	565.1	617.9	666.6	739.7	981.3	1222.9	1289.9
35°	490.0	492.0	503.5	506.9	521.1	561.0	601.0	657.1	876.4	1111.3	1185.0
37.5°	461.6	464.3	471.0	475.1	486.6	518.4	545.5	592.2	775.6	994.9	1076.7
40°	433.8	438.5	443.3	443.3	456.1	480.5	502.8	541.4	689.0	893.3	965.8
42.5°	410.1	414.9	416.9	417.6	424.3	446.7	465.6	492.0	623.3	803.3	874.4
45°	387.1	389.1	391.2	392.5	397.3	416.9	431.1	456.1	561.0	720.1	789.1
47.5°	366.1	366.1	367.5	369.5	372.9	387.1	399.3	417.6	507.6	645.6	702.5
50°	345.8	345.8	343.8	345.2	347.2	358.0	370.2	385.1	457.5	577.3	628.0
52.5°	321.5	321.5	322.1	320.1	322.1	331.6	341.1	356.0	414.9	514.3	557.7
55°	297.1	299.8	297.8	296.4	299.1	305.2	312.0	324.8	374.9	464.3	498.8
57.5°	272.7	274.1	273.4	275.4	274.1	279.5	285.6	294.4	339.1	408.1	440.6
60°	249.7	249.7	248.4	249.7	249.7	252.4	257.2	266.0	302.5	360.0	387.1
62.5°	224.0	224.7	225.4	224.7	224.0	227.4	231.5	237.5	270.7	313.3	333.6
65°	198.3	199.0	201.0	200.3	199.6	203.0	203.7	210.5	235.5	272.1	287.0
67.5°	175.3	173.9	174.6	176.0	176.6	177.3	178.7	185.4	203.0	232.8	245.0
70°	148.2	149.6	148.9	150.9	149.6	151.6	153.0	157.7	174.6	194.2	202.4
72.5°	123.8	124.5	124.5	126.6	125.9	127.9	129.3	131.3	143.5	161.1	164.5
75°	101.5	101.5	102.9	103.5	103.5	103.5	104.9	106.3	116.4	127.2	130.6
77.5°	77.2	80.5	79.9	80.5	81.2	83.2	81.9	84.6	90.7	96.8	98.8
80°	56.2	56.2	56.8	57.5	58.9	60.2	60.2	62.9	65.6	69.0	71.1
82.5°	35.9	36.5	38.6	39.3	39.9	42.0	42.0	42.0	45.3	46.7	46.7
85°	22.3	21.0	22.3	23.0	23.7	24.4	24.4	25.7	26.4	27.1	27.1
87.5°	10.8	10.8	10.8	10.8	11.5	11.5	11.5	11.5	12.2	12.2	12.2
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):

	80°	90°	100°	110°	112.5°	120°	130°	135°	140°	150°	157.5°
0°	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4	1458.4
2.5°	1492.3	1467.2	1430.0	1399.6	1400.9	1373.2	1352.9	1326.5	1318.3	1310.2	1299.4
5°	1523.4	1465.9	1388.7	1327.1	1308.2	1262.2	1204.0	1175.6	1158.6	1128.9	1117.3
7.5°	1562.0	1456.4	1338.7	1242.6	1221.6	1145.1	1076.1	1042.2	1010.4	989.4	963.7
10°	1587.0	1439.5	1287.9	1160.7	1140.4	1053.1	963.0	938.7	898.8	873.0	848.7
12.5°	1606.0	1426.6	1235.8	1087.6	1054.4	969.8	879.1	846.0	816.9	779.6	762.0
15°	1622.9	1402.3	1182.3	1011.1	976.6	885.2	801.3	771.5	745.1	712.6	697.1
17.5°	1616.8	1372.5	1123.4	943.4	908.9	818.9	738.4	704.5	686.9	658.5	647.7
20°	1609.4	1346.8	1067.9	879.1	841.2	757.3	678.8	654.4	636.8	618.6	609.1
22.5°	1585.7	1306.2	1011.8	820.2	784.4	700.5	633.5	613.2	599.6	586.8	578.6
25°	1545.7	1270.3	957.0	761.4	732.9	654.4	597.6	578.6	569.8	557.0	549.5
27.5°	1496.3	1222.9	902.1	713.3	680.8	611.1	562.4	550.2	540.7	530.6	523.1
30°	1434.1	1170.1	848.7	666.6	636.8	575.3	533.3	522.5	513.7	503.5	494.7
32.5°	1354.9	1116.7	798.6	623.3	598.3	544.8	506.2	497.4	490.0	477.8	473.1
35°	1266.2	1059.1	749.2	582.0	558.3	511.6	479.8	471.0	463.6	453.4	449.4
37.5°	1176.2	990.8	700.5	546.8	525.9	483.9	453.4	444.6	437.9	429.1	427.0
40°	1080.8	927.9	652.4	511.0	492.7	456.8	427.0	420.3	413.5	408.1	406.7
42.5°	984.7	855.4	610.4	481.2	461.6	428.4	401.3	393.9	389.8	387.1	387.8
45°	894.0	783.0	567.1	446.7	433.1	402.7	377.6	371.5	368.2	366.1	368.8
47.5°	795.9	709.3	526.5	417.6	404.0	377.0	353.3	347.9	346.5	345.8	350.6
50°	709.3	632.8	482.5	387.8	376.3	348.5	329.6	324.8	323.5	325.5	332.3
52.5°	627.4	561.7	442.6	360.0	348.5	323.5	305.9	302.5	301.8	306.6	313.3
55°	546.2	495.4	399.3	329.6	318.1	296.4	282.9	279.5	278.8	288.3	294.4
57.5°	477.1	431.1	358.7	300.5	291.7	271.4	259.2	256.5	258.5	267.3	273.4
60°	409.4	372.2	321.5	269.4	262.6	245.0	235.5	234.8	236.9	247.0	253.1
62.5°	348.5	320.1	281.5	240.9	236.2	220.6	211.8	213.2	215.2	225.4	230.8
65°	296.4	271.4	242.3	212.5	206.4	195.6	189.5	190.2	194.2	203.0	208.4
67.5°	245.7	225.4	209.1	185.4	180.7	171.2	166.5	169.2	171.2	180.0	185.4
70°	203.0	186.8	174.6	157.0	153.6	145.5	142.1	145.5	147.5	155.0	161.7
72.5°	163.1	153.0	143.5	130.6	127.2	121.8	121.1	122.5	125.9	133.3	136.0
75°	126.6	121.1	113.0	104.9	102.9	100.2	99.5	100.8	104.2	108.3	111.0
77.5°	96.1	91.4	85.3	81.9	79.2	77.8	78.5	80.5	81.9	85.9	88.0
80°	69.7	64.3	62.9	58.2	57.5	56.8	58.2	58.9	60.9	63.6	65.0
82.5°	46.0	42.0	40.6	39.9	39.3	38.6	40.6	41.3	42.6	44.7	45.3
85°	25.0	23.7	23.7	23.0	23.7	25.0	25.0	25.7	25.7	26.4	25.7
87.5°	11.5	10.2	10.8	10.8	10.8	11.5	11.5	12.2	12.2	12.2	11.5
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):

	160°	170°	180°
0°	1458.4	1458.4	1458.4
2.5°	1298.7	1294.0	1275.0
5°	1107.2	1091.0	1085.5
7.5°	961.0	959.7	931.2
10°	837.2	839.2	813.5
12.5°	759.3	742.4	740.4
15°	693.0	677.4	674.7
17.5°	643.6	634.1	631.4
20°	606.4	601.0	596.2
22.5°	576.6	569.8	565.8
25°	546.8	540.7	539.4
27.5°	521.1	513.7	513.7
30°	494.7	490.0	488.0
32.5°	471.0	467.0	467.0
35°	448.0	446.0	443.3
37.5°	427.0	427.0	425.7
40°	406.7	408.8	408.8
42.5°	389.1	391.2	391.2
45°	370.2	373.6	374.9
47.5°	351.2	356.7	358.0
50°	334.3	338.4	339.1
52.5°	316.1	320.8	324.2
55°	297.1	301.8	303.9
57.5°	276.8	281.5	282.2
60°	254.5	259.2	260.6
62.5°	234.2	236.9	238.2
65°	209.1	213.2	215.9
67.5°	186.1	189.5	189.5
70°	161.1	162.4	164.5
72.5°	137.4	138.1	138.1
75°	111.7	113.0	113.7
77.5°	88.0	88.7	88.7
80°	65.0	64.3	64.3
82.5°	45.3	43.3	43.3
85°	25.7	25.0	25.7
87.5°	11.5	11.5	11.5
90°	0.0	0.0	0.0

(END OF REPORT)