

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: P646647

Luminaire Tested: S123DR-S560D940-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

Test Information

Test Method: LM-79-2019
Report Number: P646647
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-S560D940-X4F0-XX-UDD-G-W
Description: DEFINE 3 DIRECT RECESSED WITH WALL GRAZE FLUSH OPTIC
STANDARD LIGHT ENGINE
Light Source: 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2216.9 lumens
Efficiency: N/A
Efficacy: 119.2 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

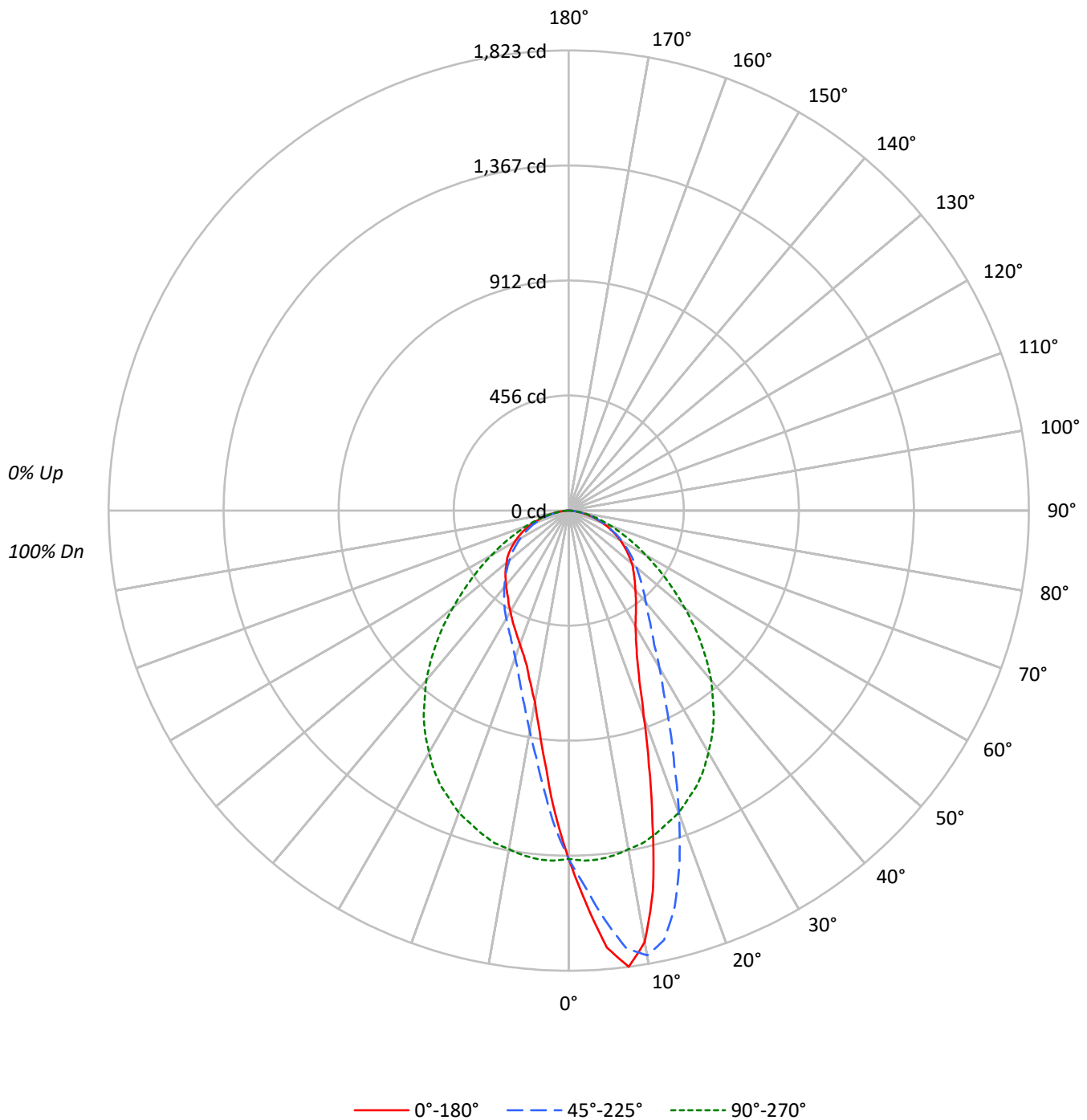
Input Watts (W): 18.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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°	16625	16625	16625	16625	16625
5°	21025	19663	16774	13452	12422
10°	21229	21887	16663	10866	9416
15°	15989	20254	16548	9105	7964
20°	11140	16378	16337	7938	7233
25°	8495	12564	15978	7278	6784
30°	7349	9985	15402	6877	6422
35°	6819	8364	14739	6554	6169
40°	6455	7482	13807	6254	6082
45°	6240	6951	12623	5990	6044
50°	6133	6565	11223	5760	6013
55°	5905	6201	9846	5554	6040
60°	5694	5863	8485	5355	5940
65°	5349	5494	7319	5129	5822
70°	4939	5098	6225	4851	5482
75°	4469	4618	5335	4441	5009
80°	3685	3955	4219	3865	4219
85°	2917	3180	3097	3359	3359

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 80°

Vertical Angle: 45°

Luminance: 14413 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	130.5	5.9
10°-20°	324.6	14.6
20°-30°	384.2	17.3
30°-40°	386.1	17.4
40°-50°	354.1	16.0
50°-60°	292.3	13.2
60°-70°	206.8	9.3
70°-80°	110.4	5.0
80°-90°	28.0	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°	839.2	37.9
0°-40°	1225.3	55.3
0°-60°	1871.6	84.4
0°-90°	2216.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2216.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1380	1380	1380	1380	1380	
5°	1738	1626	1387	1112	1027	166
15°	1282	1624	1327	730	638	354
25°	639	945	1202	547	510	302
35°	464	569	1002	446	419	291
45°	366	408	741	352	355	284
55°	281	295	469	264	288	252
65°	188	193	257	180	204	186
75°	96	99	115	95	108	101
85°	21	23	22	24	24	25
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°	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8
2.5°	1555.2	1552.0	1536.0	1525.8	1528.3	1505.3	1491.2	1479.7	1472.0	1453.4	1443.8
5°	1738.3	1747.3	1737.1	1731.9	1705.7	1664.1	1625.7	1617.3	1581.5	1537.3	1521.9
7.5°	1822.9	1828.0	1821.6	1821.6	1813.3	1776.1	1749.2	1728.1	1666.6	1609.6	1583.4
10°	1735.1	1746.7	1771.6	1783.2	1799.8	1794.7	1788.9	1780.6	1739.0	1673.0	1642.9
12.5°	1542.4	1556.5	1606.4	1613.5	1670.5	1725.5	1743.5	1763.9	1767.8	1712.1	1679.4
15°	1281.8	1320.9	1366.3	1388.1	1460.5	1576.3	1623.7	1679.4	1745.4	1722.3	1696.7
17.5°	1055.8	1070.5	1119.2	1165.3	1237.6	1371.5	1459.2	1542.4	1683.9	1707.0	1691.0
20°	868.8	882.3	946.3	943.1	1039.2	1189.6	1277.3	1373.4	1582.1	1657.0	1653.8
22.5°	729.9	751.0	786.9	806.7	875.9	1009.7	1092.9	1212.7	1466.2	1584.7	1597.5
25°	639.0	654.4	676.1	693.4	747.2	857.3	945.0	1043.6	1320.2	1489.9	1521.9
27.5°	576.9	583.3	605.1	615.3	651.2	745.9	813.8	904.1	1185.1	1383.6	1428.4
30°	528.2	532.7	551.9	555.1	583.3	651.8	717.7	791.4	1053.2	1274.1	1325.4
32.5°	494.3	497.5	512.2	513.5	534.6	584.6	630.7	699.8	928.4	1157.0	1220.4
35°	463.6	465.5	476.4	479.6	493.0	530.8	568.6	621.7	829.2	1051.3	1121.1
37.5°	436.7	439.2	445.6	449.5	460.4	490.4	516.1	560.2	733.8	941.2	1018.7
40°	410.4	414.9	419.4	419.4	431.5	454.6	475.7	512.2	651.8	845.2	913.7
42.5°	388.0	392.5	394.4	395.0	401.5	422.6	440.5	465.5	589.7	760.0	827.2
45°	366.2	368.2	370.1	371.4	375.8	394.4	407.9	431.5	530.8	681.2	746.6
47.5°	346.4	346.4	347.7	349.6	352.8	366.2	377.8	395.0	480.2	610.8	664.6
50°	327.2	327.2	325.3	326.5	328.5	338.7	350.2	364.3	432.8	546.2	594.2
52.5°	304.1	304.1	304.8	302.8	304.8	313.7	322.7	336.8	392.5	486.6	527.6
55°	281.1	283.6	281.7	280.4	283.0	288.8	295.2	307.3	354.7	439.2	471.9
57.5°	258.0	259.3	258.7	260.6	259.3	264.4	270.2	278.5	320.8	386.1	416.8
60°	236.3	236.3	235.0	236.3	236.3	238.8	243.3	251.6	286.2	340.6	366.2
62.5°	211.9	212.6	213.2	212.6	211.9	215.1	219.0	224.7	256.1	296.4	315.7
65°	187.6	188.2	190.2	189.5	188.9	192.1	192.7	199.1	222.8	257.4	271.5
67.5°	165.8	164.5	165.2	166.5	167.1	167.8	169.0	175.4	192.1	220.3	231.8
70°	140.2	141.5	140.9	142.8	141.5	143.4	144.7	149.2	165.2	183.8	191.4
72.5°	117.2	117.8	117.8	119.7	119.1	121.0	122.3	124.2	135.7	152.4	155.6
75°	96.0	96.0	97.3	98.0	98.0	98.0	99.2	100.5	110.1	120.4	123.6
77.5°	73.0	76.2	75.6	76.2	76.8	78.8	77.5	80.0	85.8	91.6	93.5
80°	53.1	53.1	53.8	54.4	55.7	57.0	57.0	59.5	62.1	65.3	67.2
82.5°	33.9	34.6	36.5	37.1	37.8	39.7	39.7	39.7	42.9	44.2	44.2
85°	21.1	19.8	21.1	21.8	22.4	23.0	23.0	24.3	25.0	25.6	25.6
87.5°	10.2	10.2	10.2	10.2	10.9	10.9	10.9	10.9	11.5	11.5	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):

	80°	90°	100°	110°	112.5°	120°	130°	135°	140°	150°	157.5°
0°	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8	1379.8
2.5°	1411.8	1388.1	1352.9	1324.1	1325.4	1299.1	1279.9	1254.9	1247.2	1239.6	1229.3
5°	1441.3	1386.8	1313.8	1255.6	1237.6	1194.1	1139.0	1112.2	1096.1	1068.0	1057.1
7.5°	1477.7	1377.9	1266.5	1175.5	1155.7	1083.3	1018.0	986.0	955.9	936.1	911.7
10°	1501.4	1361.9	1218.4	1098.1	1078.9	996.3	911.1	888.1	850.3	826.0	802.9
12.5°	1519.4	1349.7	1169.1	1028.9	997.5	917.5	831.7	800.3	772.8	737.6	720.9
15°	1535.4	1326.6	1118.6	956.6	923.9	837.5	758.1	729.9	704.9	674.2	659.5
17.5°	1529.6	1298.5	1062.9	892.5	859.9	774.7	698.5	666.5	649.9	623.0	612.7
20°	1522.6	1274.1	1010.3	831.7	795.9	716.5	642.2	619.1	602.5	585.2	576.2
22.5°	1500.2	1235.7	957.2	776.0	742.1	662.7	599.3	580.1	567.3	555.1	547.4
25°	1462.4	1201.8	905.3	720.3	693.4	619.1	565.4	547.4	539.1	526.9	519.9
27.5°	1415.6	1157.0	853.5	674.8	644.1	578.2	532.1	520.5	511.6	502.0	494.9
30°	1356.7	1107.0	802.9	630.7	602.5	544.2	504.5	494.3	486.0	476.4	468.0
32.5°	1281.8	1056.4	755.5	589.7	566.0	515.4	478.9	470.6	463.6	452.0	447.6
35°	1197.9	1002.0	708.8	550.6	528.2	484.0	454.0	445.6	438.6	429.0	425.1
37.5°	1112.8	937.4	662.7	517.3	497.5	457.8	429.0	420.7	414.3	405.9	404.0
40°	1022.5	877.8	617.2	483.4	466.1	432.2	404.0	397.6	391.2	386.1	384.8
42.5°	931.6	809.3	577.5	455.2	436.7	405.3	379.7	372.6	368.8	366.2	366.9
45°	845.8	740.8	536.5	422.6	409.8	381.0	357.3	351.5	348.3	346.4	348.9
47.5°	753.0	671.0	498.1	395.0	382.2	356.6	334.2	329.1	327.8	327.2	331.7
50°	671.0	598.7	456.5	366.9	356.0	329.7	311.8	307.3	306.1	308.0	314.4
52.5°	593.5	531.4	418.7	340.6	329.7	306.1	289.4	286.2	285.6	290.0	296.4
55°	516.7	468.7	377.8	311.8	300.9	280.4	267.6	264.4	263.8	272.8	278.5
57.5°	451.4	407.9	339.3	284.3	276.0	256.7	245.2	242.7	244.6	252.9	258.7
60°	387.4	352.1	304.1	254.8	248.4	231.8	222.8	222.2	224.1	233.7	239.5
62.5°	329.7	302.8	266.4	227.9	223.5	208.7	200.4	201.7	203.6	213.2	218.3
65°	280.4	256.7	229.2	201.0	195.3	185.0	179.3	179.9	183.8	192.1	197.2
67.5°	232.4	213.2	197.8	175.4	171.0	162.0	157.5	160.1	162.0	170.3	175.4
70°	192.1	176.7	165.2	148.5	145.3	137.7	134.5	137.7	139.6	146.6	153.0
72.5°	154.3	144.7	135.7	123.6	120.4	115.2	114.6	115.9	119.1	126.1	128.7
75°	119.7	114.6	106.9	99.2	97.3	94.8	94.1	95.4	98.6	102.4	105.0
77.5°	90.9	86.4	80.7	77.5	74.9	73.6	74.3	76.2	77.5	81.3	83.2
80°	65.9	60.8	59.5	55.1	54.4	53.8	55.1	55.7	57.6	60.2	61.5
82.5°	43.5	39.7	38.4	37.8	37.1	36.5	38.4	39.1	40.3	42.3	42.9
85°	23.7	22.4	22.4	21.8	22.4	23.7	23.7	24.3	24.3	25.0	24.3
87.5°	10.9	9.6	10.2	10.2	10.2	10.9	10.9	11.5	11.5	11.5	10.9
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°	1379.8	1379.8	1379.8
2.5°	1228.7	1224.2	1206.3
5°	1047.5	1032.1	1027.0
7.5°	909.2	907.9	881.0
10°	792.0	793.9	769.6
12.5°	718.4	702.4	700.5
15°	655.6	640.9	638.4
17.5°	608.9	599.9	597.4
20°	573.7	568.6	564.1
22.5°	545.5	539.1	535.3
25°	517.3	511.6	510.3
27.5°	493.0	486.0	486.0
30°	468.0	463.6	461.6
32.5°	445.6	441.8	441.8
35°	423.9	421.9	419.4
37.5°	404.0	404.0	402.7
40°	384.8	386.7	386.7
42.5°	368.2	370.1	370.1
45°	350.2	353.4	354.7
47.5°	332.3	337.4	338.7
50°	316.3	320.1	320.8
52.5°	299.0	303.5	306.7
55°	281.1	285.6	287.5
57.5°	261.9	266.4	267.0
60°	240.7	245.2	246.5
62.5°	221.5	224.1	225.4
65°	197.8	201.7	204.2
67.5°	176.1	179.3	179.3
70°	152.4	153.7	155.6
72.5°	130.0	130.6	130.6
75°	105.6	106.9	107.6
77.5°	83.2	83.9	83.9
80°	61.5	60.8	60.8
82.5°	42.9	41.0	41.0
85°	24.3	23.7	24.3
87.5°	10.9	10.9	10.9
90°	0.0	0.0	0.0

(END OF REPORT)