

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: P646645

Luminaire Tested: S123DR-S560D930-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

Test Information

Test Method: LM-79-2019
Report Number: P646645
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-S560D930-X4F0-XX-UDD-G-W
Description: DEFINE 3 DIRECT RECESSED WITH WALL GRAZE FLUSH OPTIC
STANDARD LIGHT ENGINE
Light Source: 3000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2027.0 lumens
Efficiency: N/A
Efficacy: 109.0 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

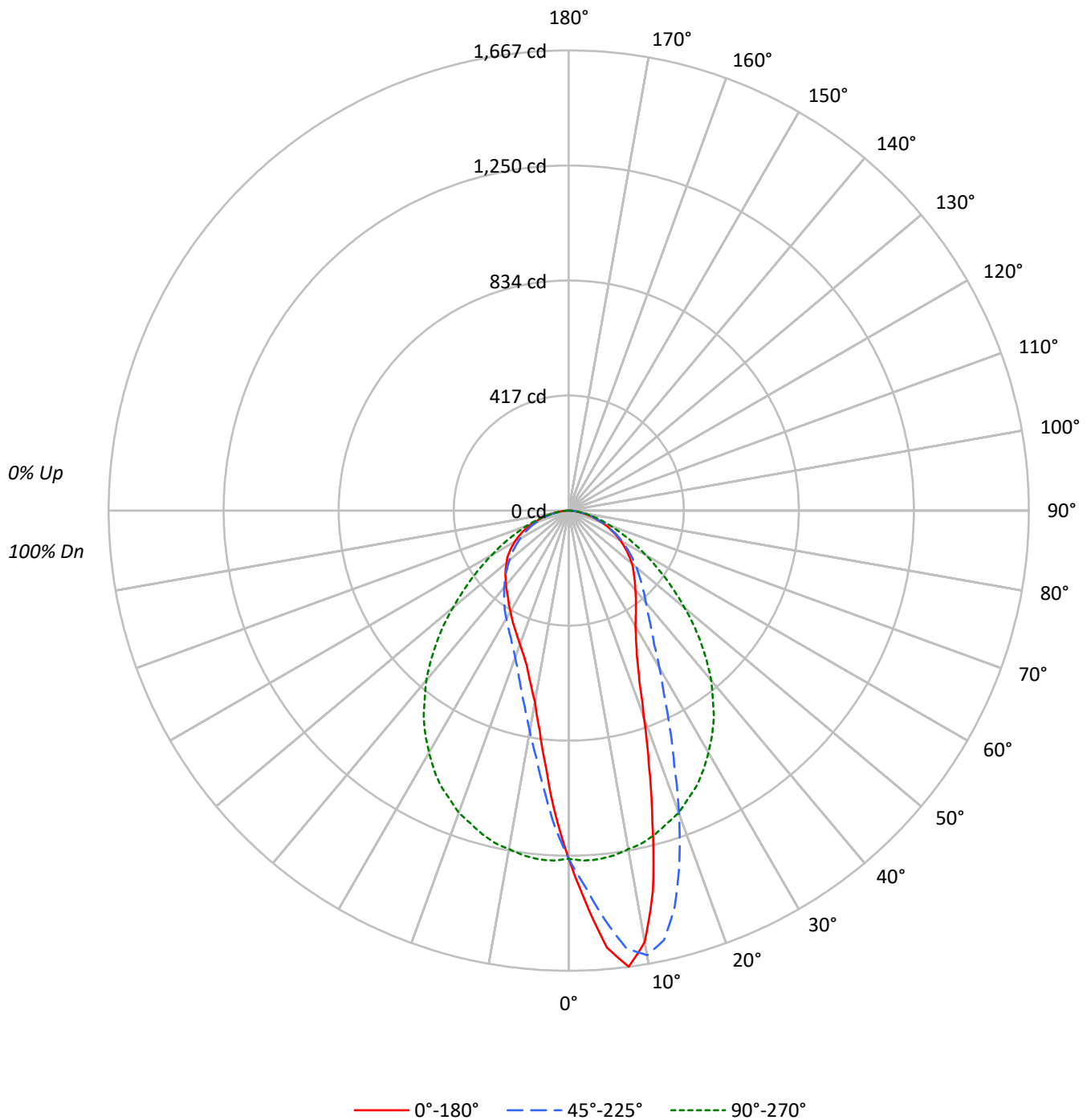
Input Watts (W): 18.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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°	15201	15201	15201	15201	15201
5°	19224	17977	15337	12300	11357
10°	19411	20012	15235	9935	8610
15°	14620	18519	15131	8325	7280
20°	10186	14975	14938	7259	6613
25°	7767	11488	14608	6654	6203
30°	6720	9130	14083	6287	5873
35°	6234	7646	13477	5993	5640
40°	5902	6842	12624	5718	5562
45°	5707	6354	11541	5477	5526
50°	5607	6002	10261	5267	5498
55°	5399	5670	9002	5080	5521
60°	5205	5362	7760	4894	5432
65°	4890	5024	6691	4690	5323
70°	4516	4661	5693	4435	5013
75°	4087	4222	4879	4060	4576
80°	3372	3615	3858	3532	3858
85°	2668	2917	2834	3069	3069

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 80°

Vertical Angle: 45°

Luminance: 13177 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	119.3	5.9
10°-20°	296.8	14.6
20°-30°	351.3	17.3
30°-40°	353.0	17.4
40°-50°	323.7	16.0
50°-60°	267.2	13.2
60°-70°	189.1	9.3
70°-80°	101.0	5.0
80°-90°	25.6	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°	767.3	37.9
0°-40°	1120.3	55.3
0°-60°	1711.3	84.4
0°-90°	2027.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2027.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1262	1262	1262	1262	1262	
5°	1589	1486	1268	1017	939	151
15°	1172	1485	1213	667	584	324
25°	584	864	1099	500	467	276
35°	424	520	916	407	383	266
45°	335	373	677	321	324	259
55°	257	270	428	242	263	230
65°	172	176	235	164	187	170
75°	88	91	105	87	98	92
85°	19	21	20	22	22	23
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°	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6
2.5°	1422.0	1419.0	1404.4	1395.0	1397.4	1376.3	1363.4	1352.9	1345.8	1328.9	1320.1
5°	1589.4	1597.6	1588.2	1583.5	1559.5	1521.5	1486.3	1478.7	1446.0	1405.6	1391.5
7.5°	1666.7	1671.3	1665.5	1665.5	1657.9	1623.9	1599.3	1580.0	1523.8	1471.7	1447.7
10°	1586.5	1597.0	1619.8	1630.4	1645.6	1640.9	1635.6	1628.0	1590.0	1529.7	1502.2
12.5°	1410.2	1423.1	1468.8	1475.2	1527.3	1577.7	1594.1	1612.8	1616.3	1565.4	1535.5
15°	1172.0	1207.7	1249.3	1269.2	1335.3	1441.3	1484.6	1535.5	1595.8	1574.7	1551.3
17.5°	965.3	978.8	1023.3	1065.4	1131.6	1253.9	1334.1	1410.2	1539.6	1560.7	1546.1
20°	794.4	806.7	865.2	862.3	950.1	1087.7	1167.9	1255.7	1446.5	1515.0	1512.1
22.5°	667.4	686.7	719.5	737.6	800.8	923.2	999.3	1108.8	1340.6	1448.9	1460.6
25°	584.2	598.3	618.2	634.0	683.2	783.9	864.1	954.2	1207.1	1362.2	1391.5
27.5°	527.5	533.3	553.2	562.6	595.4	682.0	744.1	826.6	1083.6	1265.1	1306.0
30°	483.0	487.1	504.6	507.5	533.3	595.9	656.2	723.6	963.0	1165.0	1211.8
32.5°	451.9	454.9	468.3	469.5	488.8	534.5	576.6	639.8	848.8	1057.8	1115.8
35°	423.8	425.6	435.5	438.5	450.8	485.3	519.8	568.4	758.1	961.2	1025.0
37.5°	399.2	401.6	407.4	411.0	420.9	448.4	471.8	512.2	670.9	860.5	931.4
40°	375.2	379.3	383.4	383.4	394.6	415.6	435.0	468.3	595.9	772.7	835.4
42.5°	354.8	358.9	360.6	361.2	367.0	386.4	402.8	425.6	539.2	694.9	756.3
45°	334.9	336.6	338.4	339.5	343.6	360.6	372.9	394.6	485.3	622.9	682.6
47.5°	316.7	316.7	317.9	319.6	322.6	334.9	345.4	361.2	439.1	558.5	607.7
50°	299.1	299.1	297.4	298.6	300.3	309.7	320.2	333.1	395.7	499.4	543.3
52.5°	278.1	278.1	278.7	276.9	278.7	286.8	295.0	307.9	358.9	444.9	482.4
55°	257.0	259.3	257.6	256.4	258.7	264.0	269.9	281.0	324.3	401.6	431.4
57.5°	235.9	237.1	236.5	238.3	237.1	241.8	247.0	254.7	293.3	353.0	381.1
60°	216.0	216.0	214.8	216.0	216.0	218.4	222.5	230.1	261.7	311.4	334.9
62.5°	193.8	194.4	194.9	194.4	193.8	196.7	200.2	205.5	234.2	271.0	288.6
65°	171.5	172.1	173.9	173.3	172.7	175.6	176.2	182.1	203.7	235.3	248.2
67.5°	151.6	150.4	151.0	152.2	152.8	153.4	154.5	160.4	175.6	201.4	211.9
70°	128.2	129.4	128.8	130.5	129.4	131.1	132.3	136.4	151.0	168.0	175.0
72.5°	107.1	107.7	107.7	109.5	108.9	110.6	111.8	113.6	124.1	139.3	142.3
75°	87.8	87.8	89.0	89.6	89.6	89.6	90.7	91.9	100.7	110.1	113.0
77.5°	66.7	69.7	69.1	69.7	70.2	72.0	70.8	73.2	78.4	83.7	85.5
80°	48.6	48.6	49.2	49.8	50.9	52.1	52.1	54.4	56.8	59.7	61.5
82.5°	31.0	31.6	33.4	34.0	34.5	36.3	36.3	36.3	39.2	40.4	40.4
85°	19.3	18.1	19.3	19.9	20.5	21.1	21.1	22.2	22.8	23.4	23.4
87.5°	9.4	9.4	9.4	9.4	10.0	10.0	10.0	10.0	10.5	10.5	10.5
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°	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6	1261.6
2.5°	1290.8	1269.2	1237.0	1210.6	1211.8	1187.8	1170.2	1147.4	1140.4	1133.3	1124.0
5°	1317.7	1268.0	1201.3	1148.0	1131.6	1091.8	1041.4	1016.9	1002.2	976.5	966.5
7.5°	1351.1	1259.8	1157.9	1074.8	1056.7	990.5	930.8	901.5	874.0	855.9	833.6
10°	1372.8	1245.2	1114.0	1004.0	986.4	910.9	833.0	812.0	777.4	755.2	734.1
12.5°	1389.2	1234.0	1069.0	940.7	912.1	838.9	760.4	731.8	706.6	674.4	659.2
15°	1403.8	1213.0	1022.7	874.6	844.7	765.7	693.1	667.4	644.5	616.4	603.0
17.5°	1398.5	1187.2	971.8	816.1	786.2	708.3	638.7	609.4	594.2	569.6	560.2
20°	1392.1	1165.0	923.8	760.4	727.7	655.1	587.2	566.1	550.9	535.1	526.9
22.5°	1371.6	1129.8	875.2	709.5	678.5	605.9	547.9	530.4	518.7	507.5	500.5
25°	1337.1	1098.8	827.8	658.6	634.0	566.1	516.9	500.5	492.9	481.8	475.3
27.5°	1294.3	1057.8	780.3	617.0	588.9	528.6	486.5	475.9	467.7	459.0	452.5
30°	1240.5	1012.2	734.1	576.6	550.9	497.6	461.3	451.9	444.3	435.5	427.9
32.5°	1172.0	965.9	690.8	539.2	517.5	471.3	437.9	430.3	423.8	413.3	409.2
35°	1095.3	916.2	648.0	503.4	483.0	442.6	415.1	407.4	401.0	392.2	388.7
37.5°	1017.4	857.0	605.9	473.0	454.9	418.6	392.2	384.6	378.8	371.1	369.4
40°	934.9	802.6	564.3	442.0	426.2	395.1	369.4	363.5	357.7	353.0	351.8
42.5°	851.8	740.0	528.0	416.2	399.2	370.6	347.1	340.7	337.2	334.9	335.4
45°	773.3	677.3	490.6	386.4	374.7	348.3	326.7	321.4	318.5	316.7	319.0
47.5°	688.4	613.5	455.4	361.2	349.5	326.1	305.6	300.9	299.7	299.1	303.2
50°	613.5	547.4	417.4	335.4	325.5	301.5	285.1	281.0	279.8	281.6	287.4
52.5°	542.7	485.9	382.9	311.4	301.5	279.8	264.6	261.7	261.1	265.2	271.0
55°	472.4	428.5	345.4	285.1	275.1	256.4	244.7	241.8	241.2	249.4	254.7
57.5°	412.7	372.9	310.3	259.9	252.3	234.7	224.2	221.9	223.6	231.2	236.5
60°	354.2	322.0	278.1	233.0	227.1	211.9	203.7	203.1	204.9	213.7	218.9
62.5°	301.5	276.9	243.5	208.4	204.3	190.8	183.2	184.4	186.2	194.9	199.6
65°	256.4	234.7	209.6	183.8	178.5	169.2	163.9	164.5	168.0	175.6	180.3
67.5°	212.5	194.9	180.9	160.4	156.3	148.1	144.0	146.4	148.1	155.7	160.4
70°	175.6	161.6	151.0	135.8	132.9	125.9	122.9	125.9	127.6	134.1	139.9
72.5°	141.1	132.3	124.1	113.0	110.1	105.4	104.8	106.0	108.9	115.3	117.7
75°	109.5	104.8	97.8	90.7	89.0	86.6	86.1	87.2	90.2	93.7	96.0
77.5°	83.1	79.0	73.8	70.8	68.5	67.3	67.9	69.7	70.8	74.3	76.1
80°	60.3	55.6	54.4	50.3	49.8	49.2	50.3	50.9	52.7	55.0	56.2
82.5°	39.8	36.3	35.1	34.5	34.0	33.4	35.1	35.7	36.9	38.6	39.2
85°	21.7	20.5	20.5	19.9	20.5	21.7	21.7	22.2	22.2	22.8	22.2
87.5°	10.0	8.8	9.4	9.4	9.4	10.0	10.0	10.5	10.5	10.5	10.0
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°	1261.6	1261.6	1261.6
2.5°	1123.4	1119.3	1102.9
5°	957.7	943.7	939.0
7.5°	831.3	830.1	805.5
10°	724.1	725.9	703.7
12.5°	656.8	642.2	640.4
15°	599.5	586.0	583.6
17.5°	556.7	548.5	546.2
20°	524.5	519.8	515.7
22.5°	498.8	492.9	489.4
25°	473.0	467.7	466.6
27.5°	450.8	444.3	444.3
30°	427.9	423.8	422.1
32.5°	407.4	403.9	403.9
35°	387.5	385.8	383.4
37.5°	369.4	369.4	368.2
40°	351.8	353.6	353.6
42.5°	336.6	338.4	338.4
45°	320.2	323.1	324.3
47.5°	303.8	308.5	309.7
50°	289.2	292.7	293.3
52.5°	273.4	277.5	280.4
55°	257.0	261.1	262.8
57.5°	239.4	243.5	244.1
60°	220.1	224.2	225.4
62.5°	202.6	204.9	206.1
65°	180.9	184.4	186.7
67.5°	161.0	163.9	163.9
70°	139.3	140.5	142.3
72.5°	118.8	119.4	119.4
75°	96.6	97.8	98.3
77.5°	76.1	76.7	76.7
80°	56.2	55.6	55.6
82.5°	39.2	37.5	37.5
85°	22.2	21.7	22.2
87.5°	10.0	10.0	10.0
90°	0.0	0.0	0.0

(END OF REPORT)