

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: P646641

Luminaire Tested: S123DR-S560D835-X4F0-XX-UDD-G-W

Issue Date: 3/20/2023

Test Information

Test Method: LM-79-2019
Report Number: P646641
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-S560D835-X4F0-XX-UDD-G-W
Description: DEFINE 3 DIRECT RECESSED WITH WALL GRAZE FLUSH OPTIC
STANDARD LIGHT ENGINE
Light Source: 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2486.2 lumens
Efficiency: N/A
Efficacy: 133.7 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

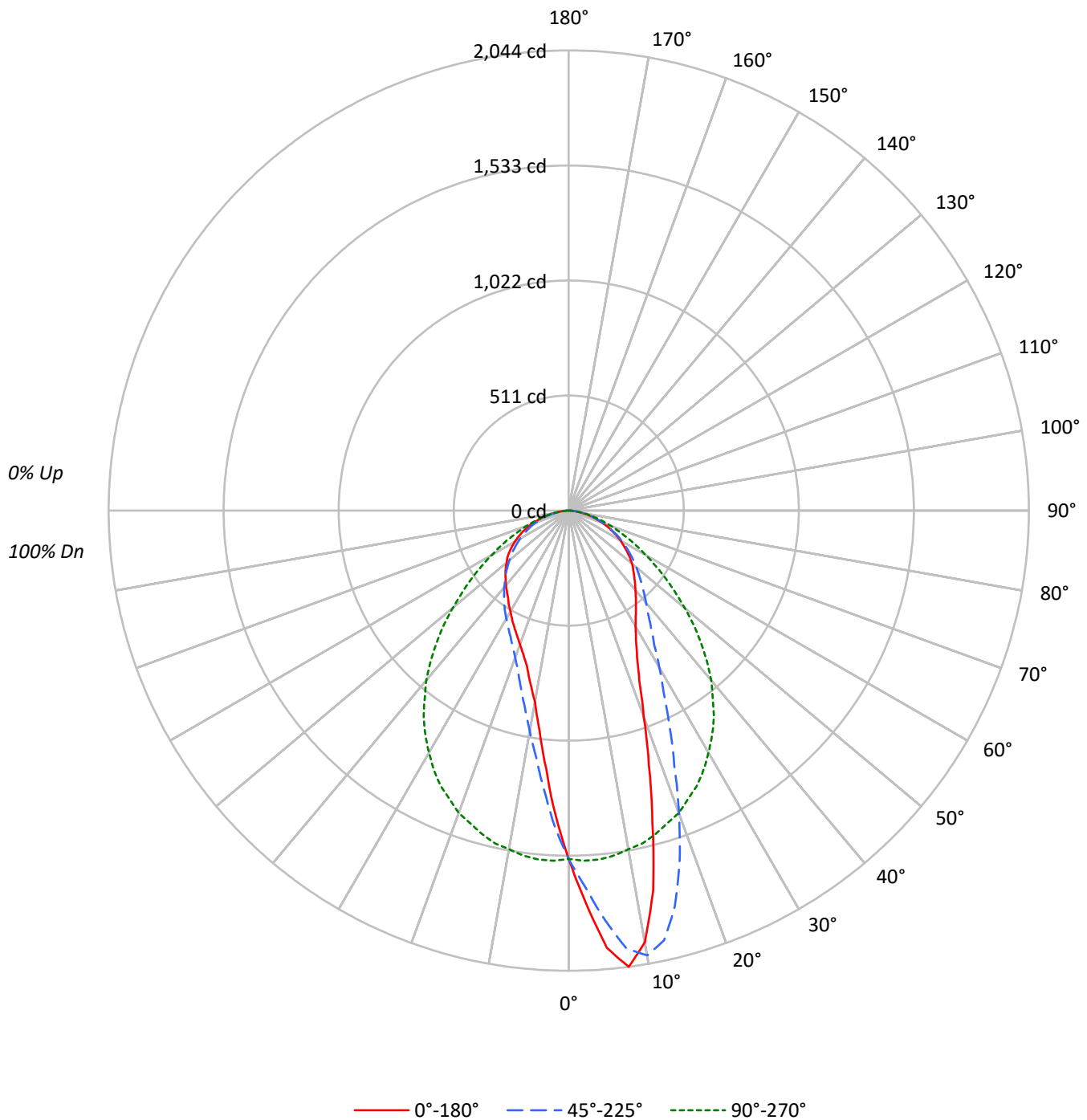
Input Watts (W): 18.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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	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	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°	18644	18644	18644	18644	18644
5°	23578	22051	18810	15085	13930
10°	23808	24546	18685	12185	10560
15°	17932	22714	18559	10211	8930
20°	12494	18368	18322	8903	8111
25°	9527	14090	17917	8162	7609
30°	8242	11199	17273	7712	7203
35°	7647	9379	16529	7350	6918
40°	7240	8391	15484	7014	6822
45°	6998	7794	14157	6717	6779
50°	6878	7363	12586	6461	6743
55°	6621	6953	11041	6229	6773
60°	6386	6576	9516	6005	6661
65°	5999	6161	8208	5753	6532
70°	5538	5718	6982	5439	6148
75°	5014	5182	5982	4981	5614
80°	4136	4434	4732	4337	4732
85°	3276	3567	3470	3774	3774

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 80°

Vertical Angle: 45°

Luminance: 16163 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	146.3	5.9
10°-20°	364.0	14.6
20°-30°	430.8	17.3
30°-40°	433.0	17.4
40°-50°	397.1	16.0
50°-60°	327.8	13.2
60°-70°	231.9	9.3
70°-80°	123.9	5.0
80°-90°	31.4	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°	941.1	37.9
0°-40°	1374.1	55.3
0°-60°	2099.0	84.4
0°-90°	2486.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2486.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1547	1547	1547	1547	1547	
5°	1949	1823	1555	1247	1152	186
15°	1438	1821	1488	819	716	397
25°	717	1060	1348	614	572	338
35°	520	638	1124	500	470	327
45°	411	457	831	394	398	318
55°	315	331	526	296	322	282
65°	210	216	288	202	229	209
75°	108	111	128	107	121	113
85°	24	26	25	27	27	28
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°	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3
2.5°	1744.1	1740.5	1722.5	1711.1	1713.9	1688.1	1672.3	1659.4	1650.7	1629.9	1619.2
5°	1949.4	1959.5	1948.0	1942.3	1912.8	1866.2	1823.1	1813.7	1773.5	1724.0	1706.7
7.5°	2044.2	2050.0	2042.8	2042.8	2033.5	1991.8	1961.6	1938.0	1869.0	1805.1	1775.7
10°	1945.9	1958.8	1986.8	1999.7	2018.4	2012.6	2006.2	1996.8	1950.2	1876.2	1842.5
12.5°	1729.7	1745.5	1801.5	1809.4	1873.3	1935.1	1955.2	1978.2	1982.5	1920.0	1883.4
15°	1437.5	1481.3	1532.3	1556.7	1637.8	1767.8	1820.9	1883.4	1957.3	1931.5	1902.8
17.5°	1184.0	1200.5	1255.1	1306.8	1387.9	1538.0	1636.4	1729.7	1888.4	1914.3	1896.3
20°	974.4	989.4	1061.2	1057.7	1165.4	1334.1	1432.5	1540.2	1774.2	1858.3	1854.7
22.5°	818.6	842.2	882.5	904.7	982.3	1132.3	1225.7	1359.9	1644.3	1777.1	1791.5
25°	716.6	733.8	758.2	777.6	837.9	961.4	1059.8	1170.4	1480.6	1670.8	1706.7
27.5°	646.9	654.1	678.5	690.0	730.2	836.5	912.6	1013.9	1329.1	1551.7	1601.9
30°	592.4	597.4	618.9	622.5	654.1	731.0	804.9	887.5	1181.2	1428.9	1486.3
32.5°	554.3	557.9	574.4	575.9	599.6	655.6	707.3	784.8	1041.1	1297.5	1368.6
35°	519.9	522.0	534.2	537.8	552.9	595.2	637.6	697.2	929.8	1179.0	1257.3
37.5°	489.7	492.6	499.7	504.1	516.3	550.0	578.7	628.3	822.9	1055.5	1142.4
40°	460.3	465.3	470.3	470.3	484.0	509.8	533.5	574.4	731.0	947.8	1024.6
42.5°	435.1	440.2	442.3	443.0	450.2	473.9	494.0	522.0	661.3	852.3	927.7
45°	410.7	412.9	415.0	416.5	421.5	442.3	457.4	484.0	595.2	764.0	837.2
47.5°	388.5	388.5	389.9	392.0	395.6	410.7	423.6	443.0	538.5	685.0	745.3
50°	366.9	366.9	364.8	366.2	368.3	379.8	392.8	408.6	485.4	612.5	666.3
52.5°	341.1	341.1	341.8	339.6	341.8	351.8	361.9	377.7	440.2	545.7	591.7
55°	315.2	318.1	315.9	314.5	317.4	323.8	331.0	344.7	397.8	492.6	529.2
57.5°	289.4	290.8	290.1	292.2	290.8	296.5	303.0	312.3	359.7	433.0	467.4
60°	265.0	265.0	263.5	265.0	265.0	267.8	272.9	282.2	321.0	382.0	410.7
62.5°	237.7	238.4	239.1	238.4	237.7	241.3	245.6	252.0	287.2	332.4	354.0
65°	210.4	211.1	213.3	212.5	211.8	215.4	216.1	223.3	249.9	288.6	304.4
67.5°	186.0	184.5	185.3	186.7	187.4	188.1	189.6	196.7	215.4	247.0	259.9
70°	157.2	158.7	158.0	160.1	158.7	160.8	162.3	167.3	185.3	206.1	214.7
72.5°	131.4	132.1	132.1	134.3	133.6	135.7	137.1	139.3	152.2	170.9	174.5
75°	107.7	107.7	109.1	109.9	109.9	109.9	111.3	112.7	123.5	135.0	138.6
77.5°	81.9	85.4	84.7	85.4	86.2	88.3	86.9	89.8	96.2	102.7	104.8
80°	59.6	59.6	60.3	61.0	62.5	63.9	63.9	66.8	69.6	73.2	75.4
82.5°	38.1	38.8	40.9	41.6	42.4	44.5	44.5	44.5	48.1	49.5	49.5
85°	23.7	22.3	23.7	24.4	25.1	25.8	25.8	27.3	28.0	28.7	28.7
87.5°	11.5	11.5	11.5	11.5	12.2	12.2	12.2	12.2	12.9	12.9	12.9
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):

	80°	90°	100°	110°	112.5°	120°	130°	135°	140°	150°	157.5°
0°	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3	1547.3
2.5°	1583.2	1556.7	1517.2	1484.9	1486.3	1456.9	1435.3	1407.3	1398.7	1390.1	1378.6
5°	1616.3	1555.2	1473.4	1408.1	1387.9	1339.1	1277.4	1247.2	1229.3	1197.7	1185.5
7.5°	1657.2	1545.2	1420.3	1318.3	1296.0	1214.9	1141.7	1105.8	1072.0	1049.8	1022.5
10°	1683.8	1527.2	1366.4	1231.4	1209.9	1117.2	1021.8	995.9	953.5	926.3	900.4
12.5°	1703.9	1513.6	1311.1	1153.9	1118.7	1028.9	932.7	897.5	866.7	827.2	808.5
15°	1721.8	1487.8	1254.4	1072.7	1036.1	939.2	850.1	818.6	790.5	756.1	739.6
17.5°	1715.4	1456.2	1191.9	1000.9	964.3	868.8	783.4	747.5	728.8	698.6	687.2
20°	1707.5	1428.9	1133.0	932.7	892.5	803.5	720.2	694.3	675.7	656.3	646.2
22.5°	1682.3	1385.8	1073.5	870.2	832.2	743.2	672.1	650.5	636.2	622.5	613.9
25°	1640.0	1347.7	1015.3	807.8	777.6	694.3	634.0	613.9	604.6	590.9	583.0
27.5°	1587.6	1297.5	957.1	756.8	722.3	648.4	596.7	583.8	573.7	562.9	555.0
30°	1521.5	1241.5	900.4	707.3	675.7	610.3	565.8	554.3	545.0	534.2	524.9
32.5°	1437.5	1184.7	847.3	661.3	634.7	578.0	537.1	527.7	519.9	506.9	501.9
35°	1343.4	1123.7	794.9	617.5	592.4	542.8	509.1	499.7	491.8	481.1	476.8
37.5°	1247.9	1051.2	743.2	580.2	557.9	513.4	481.1	471.7	464.6	455.2	453.1
40°	1146.7	984.4	692.2	542.1	522.7	484.7	453.1	445.9	438.7	433.0	431.5
42.5°	1044.7	907.6	647.7	510.5	489.7	454.5	425.8	417.9	413.6	410.7	411.4
45°	948.5	830.8	601.7	473.9	459.5	427.2	400.7	394.2	390.6	388.5	391.3
47.5°	844.4	752.5	558.6	443.0	428.7	399.9	374.8	369.1	367.6	366.9	371.9
50°	752.5	671.4	512.0	411.4	399.2	369.8	349.7	344.7	343.2	345.4	352.6
52.5°	665.6	596.0	469.6	382.0	369.8	343.2	324.5	321.0	320.2	325.3	332.4
55°	579.4	525.6	423.6	349.7	337.5	314.5	300.1	296.5	295.8	305.9	312.3
57.5°	506.2	457.4	380.6	318.8	309.5	287.9	275.0	272.1	274.3	283.6	290.1
60°	434.4	394.9	341.1	285.8	278.6	259.9	249.9	249.2	251.3	262.1	268.5
62.5°	369.8	339.6	298.7	255.6	250.6	234.1	224.7	226.2	228.3	239.1	244.8
65°	314.5	287.9	257.1	225.5	219.0	207.5	201.0	201.8	206.1	215.4	221.2
67.5°	260.6	239.1	221.9	196.7	191.7	181.7	176.6	179.5	181.7	191.0	196.7
70°	215.4	198.2	185.3	166.6	163.0	154.4	150.8	154.4	156.5	164.4	171.6
72.5°	173.0	162.3	152.2	138.6	135.0	129.2	128.5	130.0	133.6	141.5	144.3
75°	134.3	128.5	119.9	111.3	109.1	106.3	105.5	107.0	110.6	114.9	117.8
77.5°	102.0	96.9	90.5	86.9	84.0	82.6	83.3	85.4	86.9	91.2	93.3
80°	74.0	68.2	66.8	61.8	61.0	60.3	61.8	62.5	64.6	67.5	68.9
82.5°	48.8	44.5	43.1	42.4	41.6	40.9	43.1	43.8	45.2	47.4	48.1
85°	26.6	25.1	25.1	24.4	25.1	26.6	26.6	27.3	27.3	28.0	27.3
87.5°	12.2	10.8	11.5	11.5	11.5	12.2	12.2	12.9	12.9	12.9	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):

	160°	170°	180°
0°	1547.3	1547.3	1547.3
2.5°	1377.9	1372.9	1352.8
5°	1174.7	1157.5	1151.7
7.5°	1019.6	1018.2	988.0
10°	888.2	890.4	863.1
12.5°	805.6	787.7	785.5
15°	735.3	718.7	715.9
17.5°	682.8	672.8	669.9
20°	643.4	637.6	632.6
22.5°	611.8	604.6	600.3
25°	580.2	573.7	572.3
27.5°	552.9	545.0	545.0
30°	524.9	519.9	517.7
32.5°	499.7	495.4	495.4
35°	475.3	473.2	470.3
37.5°	453.1	453.1	451.6
40°	431.5	433.7	433.7
42.5°	412.9	415.0	415.0
45°	392.8	396.4	397.8
47.5°	372.7	378.4	379.8
50°	354.7	359.0	359.7
52.5°	335.3	340.3	343.9
55°	315.2	320.2	322.4
57.5°	293.7	298.7	299.4
60°	270.0	275.0	276.4
62.5°	248.4	251.3	252.7
65°	221.9	226.2	229.1
67.5°	197.5	201.0	201.0
70°	170.9	172.3	174.5
72.5°	145.8	146.5	146.5
75°	118.5	119.9	120.6
77.5°	93.3	94.1	94.1
80°	68.9	68.2	68.2
82.5°	48.1	46.0	46.0
85°	27.3	26.6	27.3
87.5°	12.2	12.2	12.2
90°	0.0	0.0	0.0

(END OF REPORT)