

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



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: P928578

Luminaire Tested: DFN2DIP-HX4F0-060D070US930-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928578
REPORT IS A COMBINATION OF REPORTS P900878 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-060D070US930-RLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

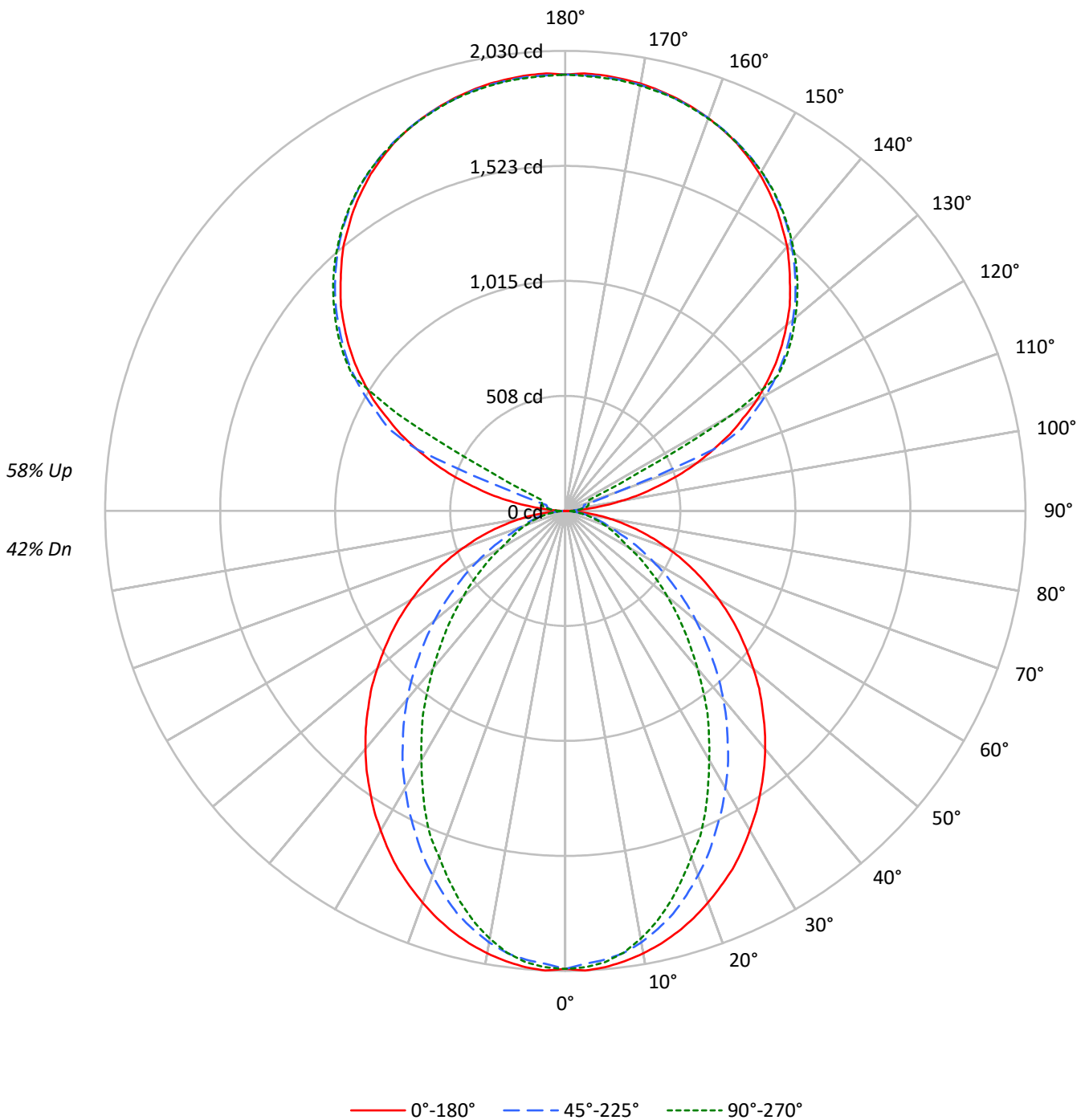
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9804.5 lumens
Efficiency: N/A
Efficacy: 92.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 106.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.099
Total Harmonic Distortion (THDi): 0.979
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				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	0	
RCR																						
0	105	105	105	105	96	96	96	96	79	79	79	64	64	64	49	49	49	49	49	49	49	42
1	96	92	89	85	88	85	81	79	70	68	66	56	55	54	44	43	42	42	42	42	42	37
2	88	81	75	70	80	74	69	65	62	58	55	50	48	45	39	38	36	36	36	36	36	31
3	81	72	65	59	74	66	60	55	55	50	47	45	42	39	35	33	31	31	31	31	31	27
4	74	64	56	50	67	59	52	47	49	44	40	40	36	34	32	29	27	27	27	27	27	24
5	68	57	49	43	62	52	46	40	44	39	35	36	32	29	29	26	24	24	24	24	24	21
6	63	51	43	38	57	47	40	35	40	34	31	33	29	26	26	23	21	21	21	21	21	18
7	58	46	39	33	53	43	36	31	36	31	27	30	26	23	24	21	19	19	19	19	19	16
8	54	42	35	29	49	39	32	28	33	28	24	27	24	21	22	19	17	17	17	17	17	15
9	50	38	31	26	46	36	29	25	30	25	22	25	21	19	21	18	16	16	16	16	16	13
10	47	35	28	24	43	33	26	22	28	23	20	23	20	17	19	16	14	14	14	14	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1503	1503	1503
5°	1505	1479	1488
10°	1491	1450	1440
15°	1470	1402	1365
20°	1443	1336	1273
25°	1415	1263	1185
30°	1378	1187	1072
35°	1342	1105	973
40°	1305	1021	860
45°	1262	927	757
50°	1217	833	657
55°	1171	732	561
60°	1117	626	462
65°	1055	519	416
70°	980	418	376
75°	886	369	343
80°	749	310	297
85°	524	208	224

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1262 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	189.4	1.9
10°-20°	520.0	5.3
20°-30°	730.0	7.4
30°-40°	795.8	8.1
40°-50°	731.4	7.5
50°-60°	574.4	5.9
60°-70°	373.9	3.8
70°-80°	192.5	2.0
80°-90°	52.5	0.5
90°-100°	63.5	0.6
100°-110°	236.7	2.4
110°-120°	627.7	6.4
120°-130°	1041.1	10.6
130°-140°	1105.9	11.3
140°-150°	1027.8	10.5
150°-160°	826.3	8.4
160°-170°	532.4	5.4
170°-180°	183.3	1.9
0°-30°	1439.4	14.7
0°-40°	2235.2	22.8
0°-60°	3541.0	36.1
0°-90°	4159.9	42.4
90°-120°	927.9	9.5
90°-150°	4102.6	41.8
90°-180°	5645.0	57.6
0°-180°	9804.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2021	2021	2021	2021	2021	
5°	2021	2012	1988	2005	1999	192
15°	1922	1902	1840	1805	1787	542
25°	1745	1686	1566	1491	1463	802
35°	1504	1410	1249	1134	1094	941
45°	1229	1106	915	784	741	949
55°	935	792	594	485	450	835
65°	631	483	318	256	250	626
75°	336	208	146	134	132	356
85°	79	40	35	35	35	90
90°	1	17	28	35	38	9
95°	90	44	54	61	60	107
105°	424	465	85	100	106	453
115°	801	825	860	215	114	789
125°	1133	1151	1177	1187	1191	1010
135°	1402	1424	1436	1450	1448	1083
145°	1626	1624	1648	1658	1651	1017
155°	1790	1778	1794	1803	1792	825
165°	1886	1878	1882	1892	1882	533
175°	1930	1920	1923	1932	1918	184
180°	1925	1925	1925	1925	1925	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2021.0	2021.0	2021.0	2021.0	2021.0
2.5°	2030.2	2021.0	2000.8	2019.2	2015.6
5°	2021.0	2011.9	1988.0	2004.6	1999.1
7.5°	2004.6	1993.7	1968.1	1975.2	1966.1
10°	1982.6	1969.8	1933.3	1927.7	1916.8
12.5°	1955.3	1938.7	1889.3	1878.4	1858.2
15°	1922.3	1902.0	1839.9	1805.2	1787.0
17.5°	1883.9	1854.5	1777.7	1737.5	1708.2
20°	1839.9	1803.3	1711.9	1666.3	1625.9
22.5°	1792.4	1750.3	1644.2	1582.1	1554.7
25°	1744.9	1686.3	1565.6	1490.7	1463.2
27.5°	1688.3	1625.9	1492.4	1406.4	1364.4
30°	1627.9	1558.2	1411.9	1318.8	1269.3
32.5°	1569.3	1485.1	1335.3	1225.4	1179.6
35°	1503.5	1410.2	1249.3	1134.0	1093.6
37.5°	1439.5	1338.7	1168.8	1042.5	996.8
40°	1371.7	1262.1	1084.5	954.7	907.2
42.5°	1302.3	1185.3	1000.5	865.0	819.5
45°	1229.1	1106.4	914.6	784.5	740.7
47.5°	1159.7	1029.8	832.3	702.3	662.1
50°	1082.8	953.0	751.8	625.4	587.2
52.5°	1007.7	870.5	674.9	554.2	519.5
55°	934.6	791.9	594.4	484.8	450.0
57.5°	859.7	713.3	523.1	420.7	391.4
60°	782.8	636.5	448.1	354.9	325.6
62.5°	707.9	561.6	384.0	296.3	281.7
65°	631.1	482.8	318.3	256.2	250.5
67.5°	557.9	409.6	256.2	224.9	219.5
70°	481.0	338.4	212.1	193.9	186.5
72.5°	407.9	272.5	177.3	162.8	159.1
75°	336.5	208.4	146.3	133.5	131.8
77.5°	265.3	148.1	115.2	107.9	104.2
80°	199.3	106.1	87.7	80.5	80.5
82.5°	139.0	71.4	60.3	56.6	56.6
85°	78.6	40.2	34.7	34.7	34.7
87.5°	29.3	14.6	14.6	12.8	12.8
90°	1.3	16.7	27.8	34.9	37.6
92.5°	34.9	29.3	33.4	36.3	37.6
95°	90.5	44.5	54.3	61.4	59.9
97.5°	162.9	48.8	71.0	75.3	76.6
100°	246.7	55.7	79.4	90.5	93.3
102.5°	338.5	335.9	82.2	97.5	101.7
105°	423.6	465.4	85.0	100.2	105.9
107.5°	522.4	557.2	87.9	103.1	108.7
110°	617.3	646.4	243.8	104.6	110.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	706.4	731.4	707.7	107.2	111.5
115°	801.1	824.7	859.6	214.6	114.3
117.5°	883.3	911.1	934.9	735.5	370.6
120°	975.2	996.1	1021.3	1038.0	849.9
122.5°	1053.1	1075.5	1103.5	1111.7	1113.2
125°	1132.6	1150.8	1177.3	1187.0	1191.1
127.5°	1205.1	1224.5	1245.6	1259.5	1260.8
130°	1273.4	1295.7	1310.9	1326.3	1325.0
132.5°	1343.0	1361.2	1376.5	1389.0	1387.7
135°	1401.6	1423.9	1436.4	1450.4	1447.6
137.5°	1462.8	1479.6	1493.6	1507.5	1503.3
140°	1522.7	1533.9	1549.2	1561.7	1554.8
142.5°	1572.9	1582.7	1600.7	1611.8	1604.9
145°	1625.9	1624.5	1648.1	1657.9	1650.9
147.5°	1671.7	1667.7	1691.3	1698.2	1692.8
150°	1716.4	1706.7	1729.0	1737.3	1730.3
152.5°	1754.0	1742.9	1763.7	1772.1	1762.4
155°	1790.2	1777.8	1794.5	1802.8	1791.7
157.5°	1819.5	1808.4	1821.0	1830.7	1819.5
160°	1844.7	1836.2	1844.7	1852.9	1843.1
162.5°	1866.8	1858.5	1865.5	1875.2	1862.7
165°	1886.3	1878.1	1882.2	1891.9	1882.2
167.5°	1901.7	1893.2	1897.6	1907.3	1894.8
170°	1914.3	1905.9	1908.6	1918.4	1905.9
172.5°	1922.6	1914.3	1917.1	1926.8	1914.3
175°	1929.5	1919.7	1922.6	1932.3	1918.4
177.5°	1932.3	1922.6	1924.1	1933.8	1921.2
180°	1925.4	1925.4	1925.4	1925.4	1925.4



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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	7.81	8.58	8.84	9.61	10.99	3.79	4.56	4.81	5.59	6.97
	3H	9.49	10.18	10.52	11.22	12.61	4.97	5.66	6.01	6.70	8.10
	4H	10.09	10.75	11.14	11.79	13.19	5.42	6.07	6.47	7.12	8.52
	6H	10.51	11.11	11.57	12.16	13.58	5.74	6.34	6.80	7.39	8.80
	8H	10.64	11.21	11.70	12.27	13.68	5.83	6.40	6.89	7.46	8.87
	12H	10.70	11.24	11.77	12.30	13.73	5.87	6.42	6.94	7.47	8.91
4H	2H	7.82	8.48	8.88	9.52	10.92	4.37	5.03	5.43	6.07	7.47
	3H	9.65	10.19	10.71	11.26	12.68	5.72	6.27	6.78	7.33	8.75
	4H	10.34	10.84	11.41	11.90	13.34	6.27	6.77	7.34	7.83	9.27
	6H	10.85	11.28	11.93	12.36	13.80	6.69	7.11	7.76	8.20	9.63
	8H	11.03	11.43	12.11	12.50	13.95	6.82	7.21	7.89	8.29	9.74
	12H	11.12	11.48	12.22	12.57	14.02	6.88	7.24	7.97	8.33	9.78
8H	4H	10.30	10.70	11.38	11.78	13.23	6.55	6.94	7.62	8.02	9.47
	6H	10.87	11.20	11.97	12.32	13.76	7.06	7.39	8.16	8.51	9.96
	8H	11.09	11.37	12.19	12.47	13.94	7.26	7.54	8.36	8.64	10.11
	12H	11.22	11.48	12.33	12.57	14.08	7.37	7.63	8.48	8.72	10.23
12H	4H	10.25	10.61	11.35	11.70	13.16	6.55	6.91	7.64	8.00	9.45
	6H	10.84	11.13	11.95	12.23	13.70	7.11	7.40	8.22	8.50	9.97
	8H	11.06	11.32	12.17	12.41	13.92	7.32	7.58	8.43	8.67	10.18