

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: P916992

Luminaire Tested: DFN2DIP-PN4F0-090D110US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916992
REPORT IS A COMBINATION OF REPORTS P899745 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-090D110US930-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

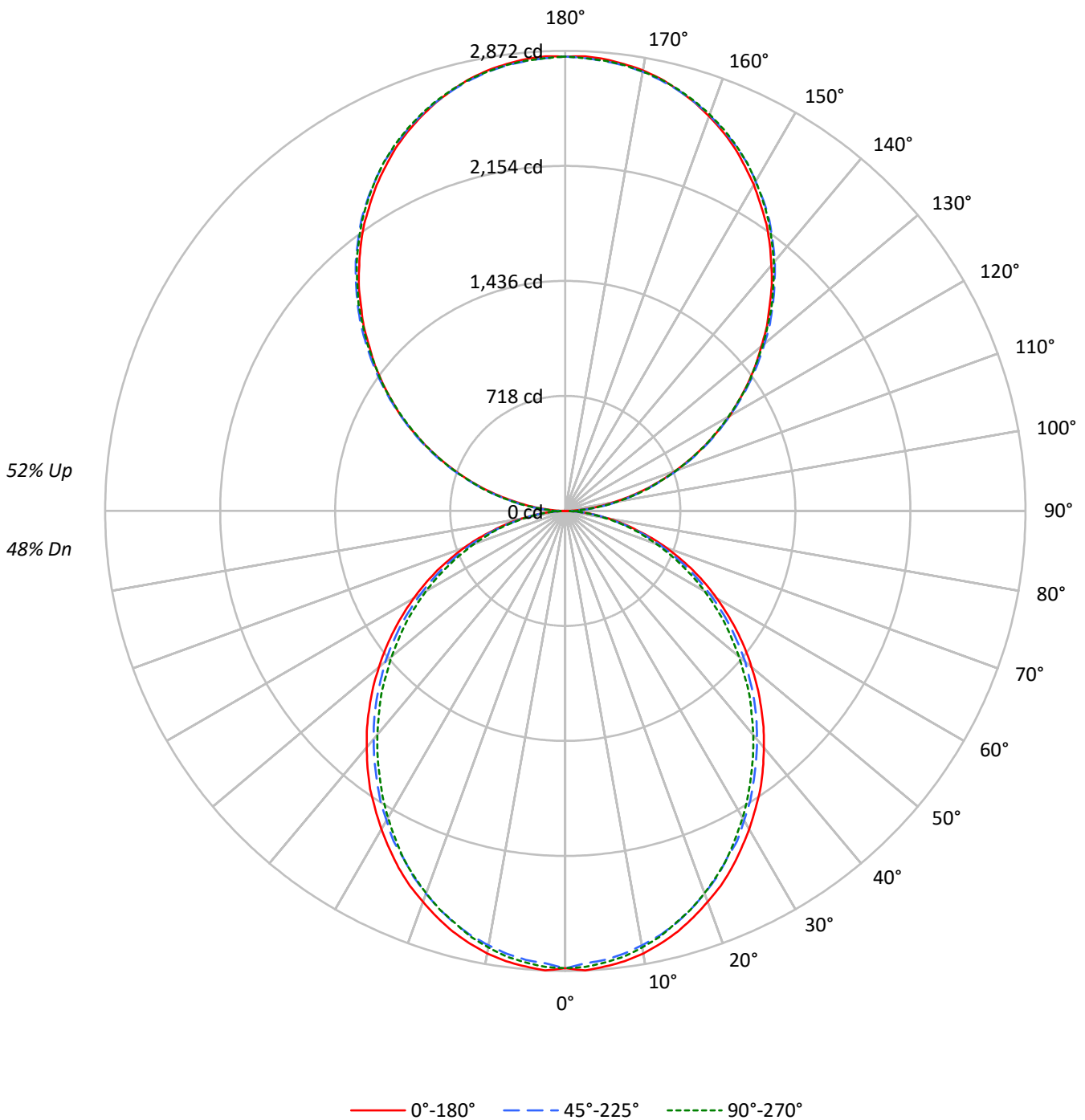
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 15201.2 lumens
Efficiency: N/A
Efficacy: 84.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 180
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9963
Total Harmonic Distortion (THDi): 0.065
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	50	30	10	0
RCR																					
0	107	107	107	107	98	98	98	98	82	82	82	68	68	68	54	54	54	48	48	48	48
1	97	93	89	86	89	86	82	79	72	70	67	59	58	56	48	47	46	40	40	40	40
2	89	81	75	70	81	75	70	65	63	59	56	52	49	47	42	40	38	34	34	34	34
3	81	71	64	58	74	66	60	54	56	51	47	46	43	40	37	35	33	29	29	29	29
4	74	63	55	49	68	58	51	46	49	44	40	41	37	34	33	31	28	25	25	25	25
5	68	56	48	42	62	52	45	40	44	39	34	37	33	29	30	27	25	21	21	21	21
6	62	50	42	37	57	47	40	34	40	34	30	33	29	26	27	24	22	19	19	19	19
7	58	46	38	32	53	42	35	30	36	31	26	30	26	23	25	22	19	17	17	17	17
8	54	41	34	28	49	38	32	27	33	27	24	28	23	20	23	20	17	15	15	15	15
9	50	38	30	25	46	35	28	24	30	25	21	26	21	18	21	18	16	13	13	13	13
10	47	35	27	23	43	32	26	21	28	23	19	24	19	17	20	16	14	12	12	12	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2084	2084	2084
5°	2087	2055	2069
10°	2071	2028	2042
15°	2040	1995	1998
20°	1999	1949	1954
25°	1958	1894	1902
30°	1907	1842	1837
35°	1858	1782	1768
40°	1798	1720	1702
45°	1739	1659	1634
50°	1673	1595	1556
55°	1605	1520	1484
60°	1528	1432	1402
65°	1444	1340	1305
70°	1336	1229	1201
75°	1188	1096	1106
80°	1009	926	922
85°	730	632	617

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 2220 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	268.7	1.8
10°-20°	756.1	5.0
20°-30°	1111.2	7.3
30°-40°	1290.5	8.5
40°-50°	1288.9	8.5
50°-60°	1123.9	7.4
60°-70°	830.8	5.5
70°-80°	470.1	3.1
80°-90°	132.1	0.9
90°-100°	175.5	1.2
100°-110°	557.7	3.7
110°-120°	954.3	6.3
120°-130°	1255.1	8.3
130°-140°	1408.8	9.3
140°-150°	1381.5	9.1
150°-160°	1158.9	7.6
160°-170°	768.5	5.1
170°-180°	268.6	1.8
0°-30°	2136.0	14.1
0°-40°	3426.5	22.5
0°-60°	5839.4	38.4
0°-90°	7272.4	47.8
90°-120°	1687.5	11.1
90°-150°	5732.8	37.7
90°-180°	7929.0	52.2
0°-180°	15201.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2855	2855	2855	2855	2855	
5°	2855	2844	2814	2836	2831	271
15°	2718	2702	2666	2677	2663	765
25°	2460	2438	2391	2397	2391	1132
35°	2122	2095	2051	2034	2021	1325
45°	1727	1708	1666	1636	1625	1333
55°	1307	1290	1257	1225	1211	1169
65°	881	865	837	813	799	871
75°	461	456	442	426	431	492
85°	112	110	107	99	96	125
90°	2	31	84	79	81	15
95°	125	149	153	153	149	139
105°	515	522	527	531	531	543
115°	958	971	967	965	958	947
125°	1393	1414	1407	1400	1397	1245
135°	1802	1828	1833	1831	1824	1393
145°	2187	2204	2218	2221	2211	1367
155°	2501	2508	2516	2528	2520	1151
165°	2721	2718	2718	2735	2723	768
175°	2831	2824	2819	2836	2822	269
180°	2836	2836	2836	2836	2836	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2855.1	2855.1	2855.1	2855.1	2855.1
2.5°	2871.7	2858.0	2827.8	2855.1	2849.9
5°	2855.1	2844.3	2814.1	2835.9	2830.6
7.5°	2835.9	2819.6	2789.3	2811.5	2805.9
10°	2805.9	2786.7	2753.8	2775.6	2767.4
12.5°	2764.5	2748.2	2715.4	2729.0	2723.5
15°	2718.0	2701.7	2665.8	2676.9	2663.2
17.5°	2660.2	2643.9	2608.1	2621.8	2608.1
20°	2597.1	2580.7	2542.3	2550.4	2539.7
22.5°	2534.1	2509.4	2473.5	2473.5	2468.0
25°	2459.8	2438.0	2391.4	2396.7	2391.4
27.5°	2377.4	2358.2	2322.7	2314.6	2300.9
30°	2295.3	2273.1	2232.0	2223.9	2212.9
32.5°	2207.3	2191.0	2147.0	2130.5	2119.4
35°	2122.3	2094.9	2050.9	2034.3	2020.6
37.5°	2026.2	2001.4	1957.4	1938.2	1924.5
40°	1927.4	1905.3	1861.2	1836.8	1825.8
42.5°	1831.2	1809.1	1765.4	1737.8	1721.5
45°	1727.0	1707.8	1666.4	1636.4	1625.4
47.5°	1625.4	1606.1	1562.1	1531.9	1515.6
50°	1518.2	1504.5	1466.0	1427.6	1413.9
52.5°	1413.9	1394.6	1359.1	1328.9	1309.6
55°	1307.0	1290.4	1257.4	1224.6	1210.9
57.5°	1199.8	1186.1	1150.3	1117.4	1106.3
60°	1092.6	1081.8	1043.3	1013.1	1004.9
62.5°	988.3	969.1	941.7	914.4	903.3
65°	881.4	864.8	837.4	812.7	799.0
67.5°	771.6	757.7	733.1	714.0	702.9
70°	669.9	658.8	634.1	614.9	604.1
72.5°	565.7	554.6	540.9	521.7	513.6
75°	461.1	455.8	441.9	425.6	431.1
77.5°	367.9	356.9	351.3	343.2	335.0
80°	274.7	271.7	266.2	258.0	252.6
82.5°	186.7	186.7	184.1	173.0	173.0
85°	112.4	109.8	107.2	98.7	96.1
87.5°	49.5	43.9	38.5	30.3	27.4
90°	2.5	30.8	83.8	78.7	81.2
92.5°	53.0	71.8	74.4	77.0	77.0
95°	124.8	148.8	153.0	153.0	148.8
97.5°	207.8	230.0	239.5	239.5	239.5
100°	303.5	323.2	330.0	330.0	327.5
102.5°	404.5	419.0	428.4	431.0	428.4
105°	514.8	521.6	526.8	531.0	531.0
107.5°	624.2	634.5	634.5	636.2	624.2
110°	730.3	744.0	744.0	744.0	737.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	844.8	859.3	856.8	849.9	844.8
115°	957.7	971.3	967.1	964.6	957.7
117.5°	1069.8	1088.5	1076.5	1069.8	1062.9
120°	1182.6	1201.4	1182.6	1182.6	1174.9
122.5°	1285.2	1309.1	1297.1	1290.3	1285.2
125°	1392.9	1414.3	1407.4	1399.8	1397.2
127.5°	1498.1	1524.6	1515.2	1505.0	1498.1
130°	1596.4	1627.3	1622.9	1617.8	1608.4
132.5°	1706.7	1730.7	1732.4	1720.4	1713.6
135°	1801.6	1828.1	1833.3	1830.8	1823.9
137.5°	1907.7	1929.1	1933.3	1931.6	1921.4
140°	2000.9	2022.3	2034.3	2034.3	2024.9
142.5°	2096.7	2118.1	2124.9	2127.4	2118.1
145°	2187.3	2204.4	2218.1	2220.6	2211.3
147.5°	2268.6	2289.9	2300.2	2304.4	2295.1
150°	2352.4	2366.9	2376.3	2384.0	2376.3
152.5°	2426.7	2441.2	2453.2	2462.7	2453.2
155°	2501.2	2507.9	2515.7	2527.7	2519.9
157.5°	2565.3	2570.4	2574.6	2591.8	2579.8
160°	2622.6	2627.7	2630.2	2644.8	2634.6
162.5°	2675.6	2675.6	2678.2	2694.4	2682.4
165°	2720.9	2718.3	2718.3	2735.4	2723.4
167.5°	2761.9	2754.2	2754.2	2771.4	2759.4
170°	2792.7	2785.9	2783.3	2800.4	2785.9
172.5°	2814.1	2807.2	2804.7	2821.8	2807.2
175°	2831.2	2824.4	2819.2	2836.3	2821.8
177.5°	2840.6	2833.7	2828.6	2843.2	2828.6
180°	2836.3	2836.3	2836.3	2836.3	2836.3



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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	9.63	10.47	10.60	11.46	12.76	9.19	10.03	10.16	11.02	12.32
	3H	11.29	12.04	12.27	13.04	14.36	10.80	11.56	11.79	12.56	13.88
	4H	11.88	12.59	12.88	13.59	14.92	11.39	12.10	12.39	13.11	14.44
	6H	12.28	12.94	13.29	13.94	15.29	11.79	12.44	12.80	13.45	14.79
	8H	12.38	13.01	13.40	14.03	15.37	11.89	12.52	12.91	13.54	14.88
	12H	12.43	13.03	13.45	14.04	15.41	11.93	12.53	12.95	13.55	14.91
4H	2H	10.08	10.80	11.09	11.80	13.13	9.73	10.45	10.74	11.45	12.78
	3H	11.95	12.55	12.97	13.58	14.92	11.55	12.15	12.56	13.18	14.52
	4H	12.67	13.21	13.69	14.24	15.60	12.25	12.80	13.27	13.82	15.19
	6H	13.18	13.65	14.22	14.70	16.07	12.76	13.23	13.79	14.28	15.64
	8H	13.34	13.77	14.37	14.81	16.19	12.91	13.35	13.94	14.39	15.76
	12H	13.41	13.81	14.46	14.86	16.24	12.97	13.37	14.02	14.42	15.80
8H	4H	12.86	13.30	13.90	14.34	15.72	12.49	12.93	13.53	13.97	15.35
	6H	13.50	13.86	14.55	14.94	16.32	13.12	13.48	14.18	14.56	15.94
	8H	13.72	14.04	14.78	15.10	16.50	13.33	13.65	14.40	14.72	16.12
	12H	13.85	14.13	14.92	15.19	16.63	13.45	13.73	14.52	14.79	16.23
12H	4H	12.85	13.24	13.90	14.30	15.68	12.49	12.88	13.54	13.94	15.32
	6H	13.53	13.85	14.59	14.91	16.31	13.16	13.48	14.23	14.55	15.94
	8H	13.77	14.05	14.84	15.11	16.55	13.40	13.68	14.47	14.74	16.18