

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: P923340

Luminaire Tested: DFN2DIP-SQ4F0-160D110US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923340
REPORT IS A COMBINATION OF REPORTS P900165 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D110US940-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

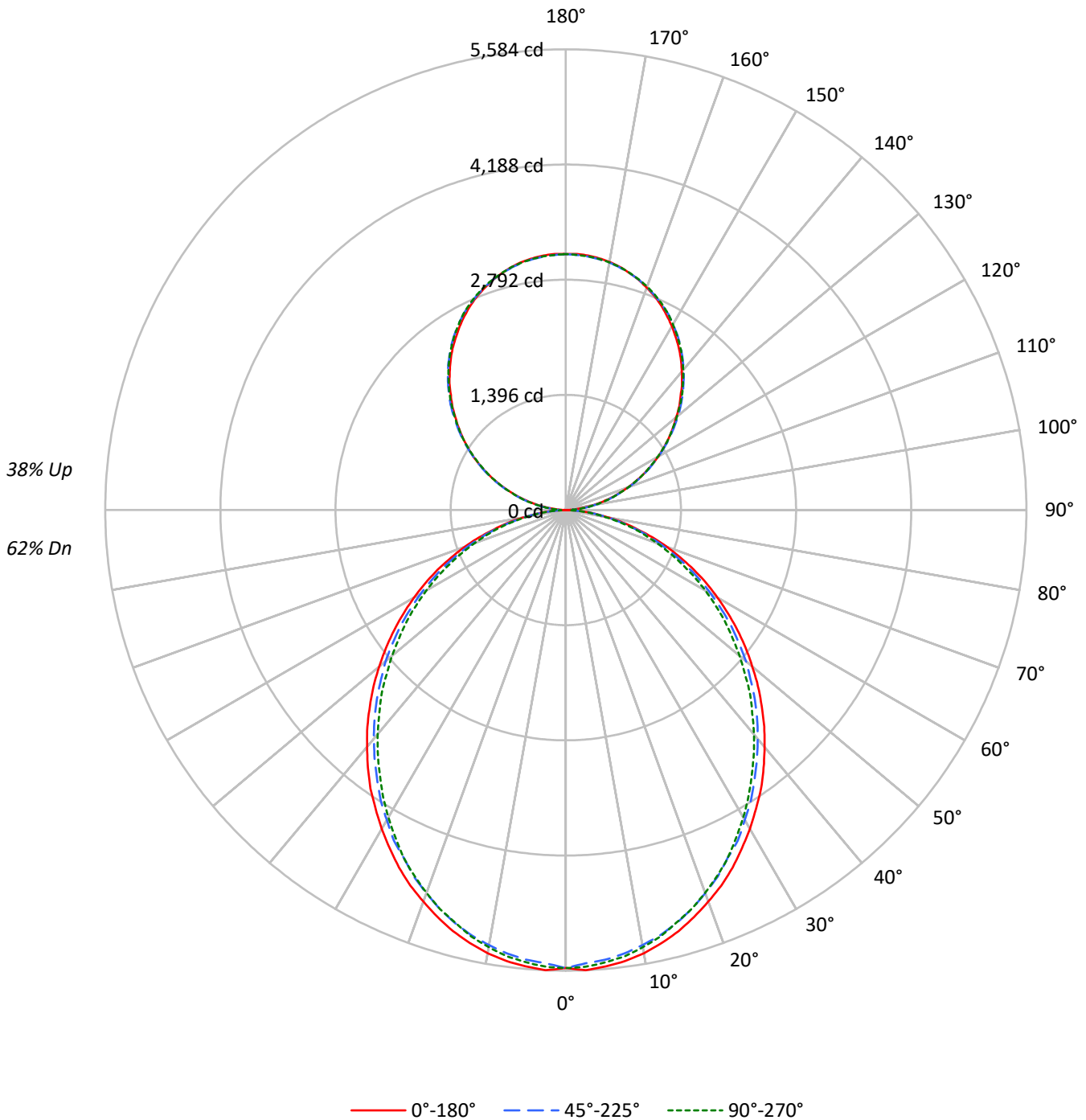
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 22805.5 lumens
Efficiency: N/A
Efficacy: 91.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 249.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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	110	110	110	110	103	103	103	103	90	90	90	78	78	78	67	67	67	67	67	67	62
1	100	96	92	89	94	90	87	84	79	76	74	69	67	65	59	58	57	57	57	57	52
2	92	84	78	72	85	79	73	69	69	65	61	60	57	54	52	50	48	48	48	48	44
3	84	74	66	60	78	69	63	57	61	56	52	53	49	46	46	43	41	41	41	41	37
4	76	65	57	51	71	62	54	49	54	49	44	48	43	40	41	38	35	35	35	35	32
5	70	58	50	44	66	55	48	42	49	43	38	43	38	34	37	34	31	31	31	31	28
6	65	52	44	38	60	49	42	37	44	38	33	39	34	30	34	30	27	27	27	27	24
7	60	47	39	34	56	45	37	32	40	34	29	35	30	27	31	27	24	24	24	24	22
8	56	43	35	30	52	41	34	29	36	30	26	32	27	24	28	25	22	22	22	22	19
9	52	39	32	27	49	37	30	26	33	28	24	30	25	21	26	22	19	19	19	19	17
10	49	36	29	24	46	34	28	23	31	25	21	28	23	19	24	21	18	18	18	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3895	3895	3895
5°	3902	3842	3868
10°	3870	3791	3817
15°	3813	3729	3736
20°	3736	3643	3653
25°	3659	3540	3558
30°	3563	3445	3436
35°	3473	3332	3306
40°	3361	3218	3184
45°	3249	3103	3058
50°	3127	2983	2912
55°	2999	2844	2779
60°	2855	2679	2626
65°	2698	2509	2445
70°	2497	2301	2252
75°	2219	2053	2075
80°	1885	1736	1733
85°	1362	1188	1165

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 3249 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	522.5	2.3
10°-20°	1470.1	6.4
20°-30°	2160.5	9.5
30°-40°	2509.3	11.0
40°-50°	2506.2	11.0
50°-60°	2185.3	9.6
60°-70°	1615.4	7.1
70°-80°	914.0	4.0
80°-90°	250.0	1.1
90°-100°	192.0	0.8
100°-110°	609.9	2.7
110°-120°	1043.8	4.6
120°-130°	1372.7	6.0
130°-140°	1540.8	6.8
140°-150°	1511.0	6.6
150°-160°	1267.5	5.6
160°-170°	840.6	3.7
170°-180°	293.8	1.3
0°-30°	4153.2	18.2
0°-40°	6662.5	29.2
0°-60°	11354.0	49.8
0°-90°	14133.5	62.0
90°-120°	1845.7	8.1
90°-150°	6270.1	27.5
90°-180°	8672.0	38.0
0°-180°	22805.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5552	5552	5552	5552	5552	
5°	5552	5531	5472	5514	5504	527
15°	5285	5253	5183	5205	5178	1488
25°	4783	4740	4650	4660	4650	2201
35°	4127	4073	3988	3955	3929	2577
45°	3358	3321	3240	3182	3160	2592
55°	2541	2509	2445	2381	2354	2272
65°	1714	1682	1628	1580	1554	1694
75°	896	886	859	827	838	957
85°	219	214	208	192	187	244
90°	3	34	92	86	89	22
95°	136	163	167	167	163	152
105°	563	570	576	581	581	594
115°	1048	1062	1058	1055	1048	1036
125°	1524	1547	1539	1531	1528	1361
135°	1970	2000	2005	2002	1995	1523
145°	2392	2411	2426	2429	2418	1495
155°	2736	2743	2752	2765	2756	1259
165°	2976	2973	2973	2992	2979	840
175°	3097	3089	3083	3102	3086	294
180°	3102	3102	3102	3102	3102	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5551.5	5551.5	5551.5	5551.5	5551.5
2.5°	5583.8	5557.1	5498.3	5551.5	5541.3
5°	5551.5	5530.6	5471.6	5514.2	5503.9
7.5°	5514.2	5482.4	5423.5	5466.5	5455.8
10°	5455.8	5418.4	5354.5	5396.9	5381.0
12.5°	5375.4	5343.7	5279.6	5306.3	5295.5
15°	5284.7	5253.1	5183.3	5204.9	5178.3
17.5°	5172.6	5140.9	5071.2	5097.8	5071.2
20°	5049.7	5018.0	4943.2	4959.1	4938.1
22.5°	4927.4	4879.3	4809.5	4809.5	4798.8
25°	4783.0	4740.5	4649.8	4660.1	4649.8
27.5°	4622.6	4585.3	4516.2	4500.4	4473.7
30°	4462.9	4419.9	4340.0	4324.2	4302.7
32.5°	4291.9	4260.2	4174.6	4142.4	4120.9
35°	4126.6	4073.3	3987.7	3955.4	3928.9
37.5°	3939.7	3891.5	3806.0	3768.5	3742.0
40°	3747.6	3704.6	3619.1	3571.5	3550.0
42.5°	3560.8	3517.7	3432.7	3379.0	3347.2
45°	3358.0	3320.6	3240.2	3181.8	3160.3
47.5°	3160.3	3122.9	3037.4	2978.5	2946.8
50°	2951.9	2925.3	2850.5	2775.7	2749.1
52.5°	2749.1	2711.8	2642.7	2583.7	2546.4
55°	2541.3	2509.0	2445.0	2381.0	2354.4
57.5°	2332.9	2306.2	2236.6	2172.6	2151.1
60°	2124.4	2103.5	2028.7	1969.8	1953.9
62.5°	1921.6	1884.3	1831.0	1777.8	1756.3
65°	1713.8	1681.5	1628.3	1580.2	1553.5
67.5°	1500.3	1473.1	1425.6	1388.1	1366.6
70°	1302.6	1281.1	1233.0	1195.6	1174.7
72.5°	1099.8	1078.3	1051.8	1014.3	998.5
75°	896.5	886.4	859.2	827.4	838.2
77.5°	715.3	693.8	683.1	667.2	651.3
80°	534.0	528.4	517.6	501.8	491.1
82.5°	363.0	363.0	357.9	336.4	336.4
85°	218.6	213.5	208.4	192.0	186.9
87.5°	96.3	85.5	74.7	58.9	53.2
90°	2.8	33.7	91.7	86.1	88.8
92.5°	58.0	78.6	81.3	84.2	84.2
95°	136.5	162.7	167.4	167.4	162.7
97.5°	227.3	251.6	261.9	261.9	261.9
100°	332.0	353.5	361.0	361.0	358.2
102.5°	442.4	458.2	468.6	471.4	468.6
105°	563.0	570.5	576.1	580.8	580.8
107.5°	682.7	693.9	693.9	695.8	682.7
110°	798.7	813.7	813.7	813.7	806.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	924.0	939.9	937.1	929.6	924.0
115°	1047.5	1062.4	1057.7	1055.0	1047.5
117.5°	1170.0	1190.5	1177.4	1170.0	1162.5
120°	1293.4	1314.0	1293.4	1293.4	1285.0
122.5°	1405.7	1431.8	1418.7	1411.2	1405.7
125°	1523.5	1546.8	1539.4	1531.0	1528.1
127.5°	1638.5	1667.5	1657.2	1646.0	1638.5
130°	1746.1	1779.8	1775.0	1769.4	1759.2
132.5°	1866.7	1892.9	1894.8	1881.7	1874.2
135°	1970.5	1999.5	2005.1	2002.3	1994.8
137.5°	2086.5	2109.9	2114.5	2112.6	2101.5
140°	2188.4	2211.8	2224.9	2224.9	2214.7
142.5°	2293.2	2316.6	2324.1	2326.8	2316.6
145°	2392.3	2411.0	2426.0	2428.8	2418.5
147.5°	2481.2	2504.5	2515.8	2520.4	2510.2
150°	2572.9	2588.7	2599.0	2607.5	2599.0
152.5°	2654.2	2670.0	2683.2	2693.5	2683.2
155°	2735.6	2743.0	2751.5	2764.6	2756.1
157.5°	2805.7	2811.3	2815.9	2834.7	2821.5
160°	2868.4	2874.0	2876.7	2892.7	2881.5
162.5°	2926.3	2926.3	2929.2	2946.9	2933.8
165°	2975.9	2973.1	2973.1	2991.8	2978.7
167.5°	3020.8	3012.4	3012.4	3031.1	3018.0
170°	3054.5	3047.0	3044.2	3062.8	3047.0
172.5°	3077.8	3070.3	3067.6	3086.3	3070.3
175°	3096.6	3089.1	3083.4	3102.2	3086.3
177.5°	3106.8	3099.3	3093.7	3109.7	3093.7
180°	3102.2	3102.2	3102.2	3102.2	3102.2



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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	13.04	14.02	13.89	14.89	15.98	12.60	13.58	13.45	14.45	15.54
	3H	14.72	15.60	15.58	16.48	17.59	14.23	15.11	15.09	15.99	17.10
	4H	15.31	16.15	16.19	17.03	18.16	14.82	15.65	15.70	16.54	17.66
	6H	15.72	16.49	16.61	17.38	18.52	15.22	15.99	16.11	16.88	18.02
	8H	15.83	16.56	16.73	17.47	18.61	15.33	16.06	16.23	16.97	18.11
	12H	15.89	16.58	16.79	17.49	18.65	15.38	16.07	16.28	16.98	18.14
4H	2H	13.52	14.35	14.40	15.24	16.36	13.17	14.00	14.05	14.88	16.01
	3H	15.40	16.10	16.29	17.01	18.15	14.99	15.69	15.89	16.61	17.75
	4H	16.12	16.76	17.03	17.67	18.84	15.70	16.33	16.60	17.25	18.41
	6H	16.65	17.20	17.57	18.13	19.30	16.22	16.77	17.14	17.70	18.87
	8H	16.81	17.32	17.73	18.25	19.43	16.37	16.88	17.29	17.81	18.99
	12H	16.89	17.35	17.83	18.30	19.48	16.44	16.90	17.38	17.85	19.04
8H	4H	16.33	16.84	17.25	17.77	18.96	15.95	16.47	16.87	17.40	18.58
	6H	16.97	17.40	17.92	18.37	19.55	16.59	17.01	17.54	17.98	19.17
	8H	17.20	17.57	18.15	18.53	19.73	16.80	17.18	17.76	18.14	19.34
	12H	17.34	17.67	18.30	18.62	19.87	16.93	17.26	17.89	18.21	19.46
12H	4H	16.32	16.78	17.26	17.73	18.92	15.95	16.42	16.89	17.36	18.55
	6H	17.00	17.38	17.96	18.34	19.54	16.63	17.01	17.59	17.97	19.17
	8H	17.25	17.58	18.21	18.54	19.79	16.87	17.20	17.83	18.16	19.41