

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: P925974

Luminaire Tested: DFN2DIP-SQ4F0-110D160US950-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P925974
REPORT IS A COMBINATION OF REPORTS P900214 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D160US950-RLLFLL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

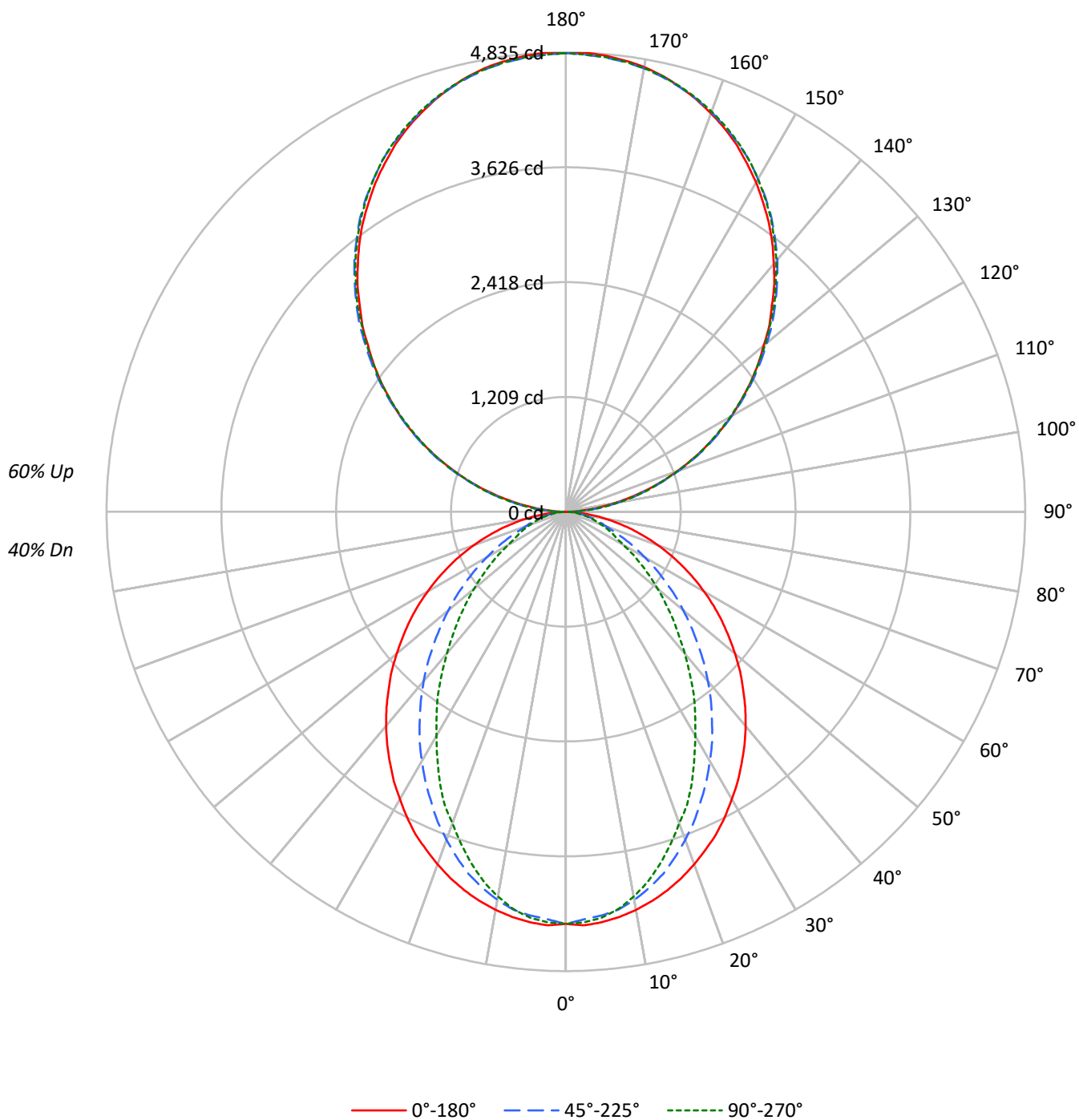
Lumens per Lamp: N/A
Luminaire Lumens: 22429.4 lumens
Efficiency: N/A
Efficacy: 98.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 227.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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
RCR																	
0	105	105	105	105	95	95	95	95	78	78	78	62	62	62	47	47	47
1	96	92	88	85	87	84	81	78	69	66	64	55	53	52	42	41	40
2	88	81	75	70	80	74	69	64	61	57	54	48	46	44	37	36	34
3	80	71	64	59	73	65	59	54	54	49	46	43	40	38	33	31	30
4	73	63	56	50	67	58	51	46	48	43	39	39	35	33	30	28	26
5	68	56	49	43	61	52	45	40	43	38	34	35	31	28	27	25	23
6	62	51	43	37	57	47	40	35	39	34	30	32	28	25	25	22	20
7	58	46	38	33	52	42	35	31	35	30	26	29	25	22	23	20	18
8	53	42	34	29	49	38	32	27	32	27	24	26	23	20	21	18	16
9	50	38	31	26	45	35	29	24	30	25	21	24	21	18	19	17	15
10	47	35	28	23	42	32	26	22	27	22	19	23	19	16	18	15	14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3043	3043	3043
5°	3048	2996	3015
10°	3018	2937	2918
15°	2976	2841	2767
20°	2921	2708	2582
25°	2865	2558	2402
30°	2789	2405	2175
35°	2715	2240	1975
40°	2640	2069	1746
45°	2552	1880	1538
50°	2462	1688	1335
55°	2367	1484	1140
60°	2258	1270	939
65°	2132	1052	846
70°	1979	850	767
75°	1787	750	700
80°	1510	631	610
85°	1051	425	464

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3798 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	406.5	1.8
10°-20°	1115.9	5.0
20°-30°	1566.7	7.0
30°-40°	1707.7	7.6
40°-50°	1569.6	7.0
50°-60°	1232.7	5.5
60°-70°	802.4	3.6
70°-80°	413.0	1.8
80°-90°	119.2	0.5
90°-100°	298.7	1.3
100°-110°	949.2	4.2
110°-120°	1624.4	7.2
120°-130°	2136.3	9.5
130°-140°	2397.9	10.7
140°-150°	2351.4	10.5
150°-160°	1972.5	8.8
160°-170°	1308.1	5.8
170°-180°	457.2	2.0
0°-30°	3089.0	13.8
0°-40°	4796.8	21.4
0°-60°	7599.1	33.9
0°-90°	8933.6	39.8
90°-120°	2872.3	12.8
90°-150°	9757.9	43.5
90°-180°	13496.0	60.2
0°-180°	22429.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4337	4337	4337	4337	4337	
5°	4337	4318	4266	4302	4290	411
15°	4125	4082	3949	3874	3835	1162
25°	3744	3619	3360	3199	3140	1722
35°	3226	3026	2681	2434	2347	2019
45°	2638	2374	1963	1684	1590	2037
55°	2006	1700	1276	1040	966	1792
65°	1354	1036	683	550	538	1343
75°	722	447	314	286	283	764
85°	169	86	74	74	74	194
90°	4	52	143	134	138	22
95°	212	253	260	260	253	236
105°	876	888	897	904	904	925
115°	1630	1653	1646	1642	1630	1612
125°	2371	2407	2396	2383	2378	2119
135°	3067	3112	3120	3116	3104	2370
145°	3723	3752	3776	3780	3764	2326
155°	4257	4269	4282	4302	4289	1960
165°	4631	4627	4627	4656	4636	1306
175°	4819	4807	4799	4828	4803	458
180°	4828	4828	4828	4828	4828	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4337.2	4337.2	4337.2	4337.2	4337.2
2.5°	4356.7	4337.2	4293.9	4333.4	4325.5
5°	4337.2	4317.6	4266.4	4301.8	4290.1
7.5°	4301.8	4278.4	4223.5	4238.9	4219.3
10°	4254.7	4227.2	4148.9	4136.8	4113.6
12.5°	4196.0	4160.6	4054.4	4031.0	3987.7
15°	4125.2	4081.9	3948.6	3874.1	3834.9
17.5°	4042.8	3979.9	3815.0	3728.7	3665.8
20°	3948.6	3869.9	3673.8	3575.9	3489.3
22.5°	3846.6	3756.2	3528.5	3395.2	3336.4
25°	3744.5	3618.8	3359.8	3199.0	3139.9
27.5°	3623.0	3489.3	3202.8	3018.3	2927.9
30°	3493.5	3344.0	3030.0	2830.0	2723.9
32.5°	3367.7	3186.9	2865.4	2629.8	2531.5
35°	3226.5	3026.2	2681.0	2433.7	2347.0
37.5°	3089.1	2873.0	2508.2	2237.0	2139.2
40°	2943.8	2708.5	2327.5	2048.8	1946.8
42.5°	2794.6	2543.6	2147.2	1856.5	1758.6
45°	2637.7	2374.5	1962.7	1683.6	1589.6
47.5°	2488.6	2210.0	1786.1	1507.0	1420.9
50°	2323.7	2045.1	1613.3	1342.2	1260.1
52.5°	2162.5	1868.1	1448.4	1189.4	1114.7
55°	2005.5	1699.5	1275.5	1040.2	965.7
57.5°	1844.8	1530.8	1122.7	902.9	839.9
60°	1679.9	1365.9	961.5	761.7	698.8
62.5°	1519.1	1205.2	824.2	635.9	604.6
65°	1354.2	1036.0	683.0	549.7	537.6
67.5°	1197.3	879.1	549.7	482.6	471.0
70°	1032.3	726.3	455.2	416.0	400.2
72.5°	875.3	584.7	380.6	349.4	341.4
75°	722.1	447.2	314.0	286.5	282.8
77.5°	569.3	317.8	247.4	231.5	223.6
80°	427.7	227.8	188.2	172.9	172.9
82.5°	298.1	153.2	129.6	121.6	121.6
85°	168.7	86.2	74.5	74.5	74.5
87.5°	62.9	31.2	31.2	27.5	27.5
90°	4.4	52.4	142.6	133.9	138.2
92.5°	90.2	122.3	126.6	131.0	131.0
95°	212.5	253.3	260.5	260.5	253.3
97.5°	353.6	391.5	407.5	407.5	407.5
100°	516.7	550.2	561.8	561.8	557.4
102.5°	688.4	713.2	729.1	733.5	729.1
105°	876.2	887.8	896.6	903.8	903.8
107.5°	1062.5	1079.9	1079.9	1082.9	1062.5
110°	1243.0	1266.2	1266.2	1266.2	1254.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1438.0	1462.8	1458.4	1446.7	1438.0
115°	1630.1	1653.4	1646.1	1641.7	1630.1
117.5°	1820.8	1852.8	1832.4	1820.8	1809.2
120°	2012.9	2044.9	2012.9	2012.9	1999.8
122.5°	2187.5	2228.4	2207.9	2196.3	2187.5
125°	2371.0	2407.3	2395.7	2382.6	2378.2
127.5°	2549.9	2595.1	2579.0	2561.6	2549.9
130°	2717.4	2769.7	2762.5	2753.7	2737.7
132.5°	2905.1	2945.9	2948.7	2928.4	2916.8
135°	3066.6	3111.8	3120.5	3116.1	3104.5
137.5°	3247.1	3283.5	3290.8	3287.9	3270.4
140°	3405.8	3442.1	3462.5	3462.5	3446.5
142.5°	3568.8	3605.2	3616.8	3621.2	3605.2
145°	3723.1	3752.2	3775.5	3779.8	3763.8
147.5°	3861.3	3897.8	3915.2	3922.5	3906.4
150°	4003.9	4028.7	4044.8	4057.8	4044.8
152.5°	4130.6	4155.3	4175.8	4191.7	4175.8
155°	4257.2	4268.9	4281.9	4302.3	4289.3
157.5°	4366.4	4375.1	4382.4	4411.5	4391.2
160°	4463.9	4472.6	4477.0	4501.7	4484.3
162.5°	4554.1	4554.1	4558.5	4586.2	4565.7
165°	4631.3	4626.9	4626.9	4656.0	4635.7
167.5°	4701.1	4688.1	4688.1	4717.1	4696.7
170°	4753.5	4741.9	4737.6	4766.7	4741.9
172.5°	4789.9	4778.3	4773.9	4803.0	4778.3
175°	4819.0	4807.4	4798.6	4827.8	4803.0
177.5°	4835.1	4823.4	4814.6	4839.5	4814.6
180°	4827.8	4827.8	4827.8	4827.8	4827.8

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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	9.99	10.75	11.04	11.80	13.21	5.96	6.71	7.00	7.76	9.17
	3H	11.67	12.34	12.73	13.40	14.83	7.14	7.81	8.19	8.87	10.30
	4H	12.28	12.92	13.35	13.97	15.41	7.59	8.22	8.65	9.28	10.72
	6H	12.70	13.29	13.78	14.35	15.80	7.90	8.49	8.98	9.55	11.00
	8H	12.83	13.38	13.91	14.46	15.91	7.99	8.55	9.07	9.63	11.07
	12H	12.89	13.42	13.97	14.49	15.96	8.03	8.56	9.12	9.63	11.10
4H	2H	10.00	10.64	11.08	11.70	13.14	6.54	7.18	7.62	8.24	9.68
	3H	11.83	12.36	12.91	13.45	14.90	7.89	8.42	8.97	9.50	10.95
	4H	12.52	13.01	13.61	14.08	15.56	8.43	8.92	9.52	10.00	11.47
	6H	13.04	13.45	14.13	14.55	16.02	8.85	9.27	9.94	10.37	11.83
	8H	13.21	13.60	14.31	14.69	16.18	8.98	9.37	10.07	10.46	11.94
	12H	13.31	13.66	14.42	14.76	16.25	9.04	9.39	10.15	10.50	11.98
8H	4H	12.49	12.87	13.58	13.97	15.45	8.71	9.10	9.80	10.19	11.67
	6H	13.05	13.37	14.17	14.51	15.99	9.23	9.55	10.34	10.68	12.16
	8H	13.27	13.55	14.40	14.67	16.17	9.42	9.70	10.54	10.82	12.31
	12H	13.41	13.66	14.54	14.77	16.30	9.54	9.78	10.66	10.89	12.43
12H	4H	12.43	12.79	13.54	13.89	15.38	8.71	9.06	9.82	10.17	11.66
	6H	13.03	13.31	14.15	14.42	15.92	9.28	9.56	10.40	10.67	12.17
	8H	13.25	13.50	14.37	14.61	16.14	9.49	9.73	10.61	10.84	12.38