

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: P925972

Luminaire Tested: DFN2DIP-SQ4F0-110D160US950-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P925972
REPORT IS A COMBINATION OF REPORTS P900213 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D160US950-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

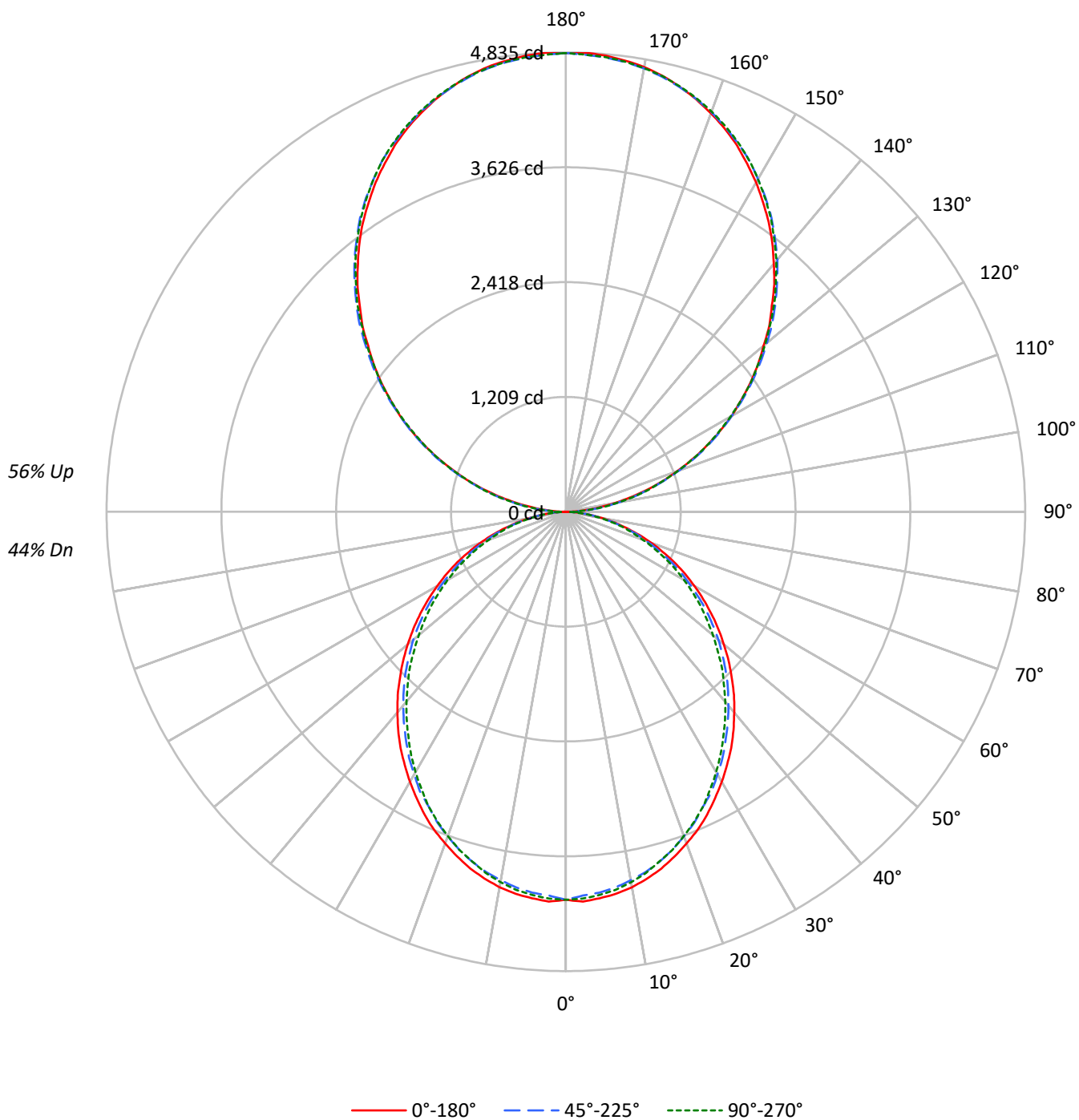
Lumens per Lamp: N/A
Luminaire Lumens: 23898.6 lumens
Efficiency: N/A
Efficacy: 105.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

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	106	106	106	106	97	97	97	97	80	80	80	64	64	64	50	50	50
1	96	92	88	85	88	84	81	78	70	68	65	57	55	54	44	43	42
2	88	80	74	69	80	74	68	64	61	57	54	50	47	45	39	37	36
3	80	71	63	58	73	65	59	53	54	49	46	44	41	38	35	32	30
4	73	62	55	49	67	57	51	45	48	43	39	39	35	32	31	28	26
5	67	56	48	42	61	51	44	39	43	37	33	35	31	28	28	25	23
6	62	50	42	36	56	46	39	34	39	33	29	32	28	25	25	22	20
7	57	45	37	32	52	42	35	30	35	30	26	29	25	22	23	20	18
8	53	41	33	28	48	38	31	26	32	27	23	26	22	19	21	18	16
9	49	37	30	25	45	34	28	23	29	24	20	24	20	17	20	17	14
10	46	34	27	22	42	32	25	21	27	22	18	22	18	16	18	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2865	2865	2865
5°	2870	2826	2845
10°	2846	2788	2807
15°	2805	2743	2748
20°	2748	2680	2687
25°	2692	2604	2617
30°	2621	2534	2527
35°	2554	2451	2432
40°	2472	2367	2342
45°	2390	2282	2249
50°	2300	2194	2142
55°	2206	2092	2044
60°	2100	1971	1931
65°	1984	1846	1799
70°	1837	1693	1656
75°	1632	1510	1526
80°	1387	1277	1275
85°	1002	874	857

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°	384.3	1.6
10°-20°	1081.3	4.5
20°-30°	1589.1	6.6
30°-40°	1845.7	7.7
40°-50°	1843.4	7.7
50°-60°	1607.4	6.7
60°-70°	1188.2	5.0
70°-80°	672.3	2.8
80°-90°	191.1	0.8
90°-100°	298.7	1.2
100°-110°	949.2	4.0
110°-120°	1624.4	6.8
120°-130°	2136.3	8.9
130°-140°	2397.9	10.0
140°-150°	2351.4	9.8
150°-160°	1972.5	8.3
160°-170°	1308.1	5.5
170°-180°	457.2	1.9
0°-30°	3054.8	12.8
0°-40°	4900.4	20.5
0°-60°	8351.2	34.9
0°-90°	10402.8	43.5
90°-120°	2872.3	12.0
90°-150°	9757.9	40.8
90°-180°	13496.0	56.5
0°-180°	23898.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4083	4083	4083	4083	4083	
5°	4083	4068	4024	4056	4048	388
15°	3887	3864	3812	3828	3809	1095
25°	3518	3487	3420	3428	3420	1619
35°	3035	2996	2933	2909	2890	1895
45°	2470	2442	2383	2340	2324	1906
55°	1869	1845	1798	1751	1732	1671
65°	1260	1237	1198	1162	1143	1246
75°	659	652	632	609	617	704
85°	161	157	153	141	138	179
90°	4	52	143	134	138	23
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°	4083.3	4083.3	4083.3	4083.3	4083.3
2.5°	4107.0	4087.4	4044.1	4083.3	4075.8
5°	4083.3	4067.9	4024.5	4055.7	4048.3
7.5°	4055.7	4032.5	3989.2	4020.8	4012.9
10°	4012.9	3985.3	3938.3	3969.5	3957.9
12.5°	3953.8	3930.4	3883.4	3902.9	3895.0
15°	3887.1	3863.7	3812.5	3828.3	3808.7
17.5°	3804.6	3781.3	3730.0	3749.6	3730.0
20°	3714.2	3690.8	3635.9	3647.5	3632.2
22.5°	3624.2	3588.8	3537.5	3537.5	3529.6
25°	3518.0	3486.8	3420.1	3427.6	3420.1
27.5°	3400.1	3372.6	3321.7	3310.1	3290.5
30°	3282.6	3250.9	3192.2	3180.5	3164.7
32.5°	3156.8	3133.5	3070.5	3046.8	3031.0
35°	3035.2	2996.0	2933.1	2909.3	2889.8
37.5°	2897.7	2862.3	2799.4	2771.8	2752.3
40°	2756.5	2724.8	2661.9	2626.9	2611.1
42.5°	2619.0	2587.3	2524.9	2485.3	2462.0
45°	2469.9	2442.3	2383.2	2340.4	2324.5
47.5°	2324.5	2297.0	2234.1	2190.8	2167.4
50°	2171.2	2151.7	2096.6	2041.7	2022.1
52.5°	2022.1	1994.5	1943.8	1900.4	1872.9
55°	1869.2	1845.4	1798.4	1751.3	1731.7
57.5°	1715.9	1696.3	1645.1	1597.9	1582.1
60°	1562.6	1547.2	1492.2	1448.8	1437.2
62.5°	1413.4	1386.0	1346.8	1307.6	1291.8
65°	1260.5	1236.8	1197.7	1162.3	1142.7
67.5°	1103.5	1083.6	1048.5	1021.1	1005.2
70°	958.1	942.3	906.9	879.4	863.9
72.5°	809.0	793.2	773.6	746.1	734.4
75°	659.4	652.0	631.9	608.7	616.6
77.5°	526.1	510.3	502.4	490.7	479.1
80°	392.9	388.7	380.7	369.1	361.2
82.5°	267.0	267.0	263.3	247.5	247.5
85°	160.8	157.0	153.3	141.2	137.5
87.5°	70.8	62.9	55.0	43.3	39.1
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	10.31	11.12	11.32	12.14	13.50	9.87	10.67	10.88	11.69	13.05
	3H	11.97	12.69	12.99	13.72	15.10	11.48	12.20	12.50	13.23	14.61
	4H	12.56	13.24	13.59	14.28	15.66	12.06	12.75	13.10	13.78	15.17
	6H	12.96	13.59	14.00	14.63	16.03	12.46	13.09	13.50	14.13	15.53
	8H	13.06	13.66	14.11	14.72	16.11	12.56	13.16	13.61	14.22	15.61
	12H	13.11	13.68	14.17	14.73	16.15	12.60	13.17	13.66	14.22	15.64
4H	2H	10.77	11.45	11.81	12.48	13.87	10.41	11.10	11.45	12.13	13.52
	3H	12.63	13.20	13.68	14.26	15.66	12.22	12.79	13.27	13.85	15.26
	4H	13.35	13.87	14.40	14.92	16.35	12.92	13.45	13.98	14.50	15.92
	6H	13.86	14.31	14.93	15.39	16.81	13.43	13.88	14.49	14.96	16.37
	8H	14.01	14.43	15.08	15.50	16.94	13.58	14.00	14.64	15.06	16.50
	12H	14.09	14.47	15.17	15.55	16.99	13.64	14.02	14.72	15.10	16.54
8H	4H	13.54	13.96	14.60	15.03	16.46	13.16	13.58	14.23	14.65	16.08
	6H	14.17	14.52	15.26	15.63	17.06	13.79	14.14	14.88	15.25	16.68
	8H	14.40	14.70	15.49	15.79	17.24	14.00	14.31	15.10	15.40	16.85
	12H	14.53	14.80	15.63	15.88	17.37	14.12	14.39	15.22	15.47	16.96
12H	4H	13.52	13.90	14.60	14.98	16.42	13.15	13.53	14.24	14.62	16.06
	6H	14.20	14.51	15.30	15.60	17.05	13.83	14.14	14.93	15.23	16.68
	8H	14.44	14.71	15.54	15.80	17.29	14.06	14.33	15.16	15.42	16.91