

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: P917824

Luminaire Tested: DFN2DIP-SQ4F0-120D160US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917824
REPORT IS A COMBINATION OF REPORTS P900215 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-120D160US930-FLLFL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

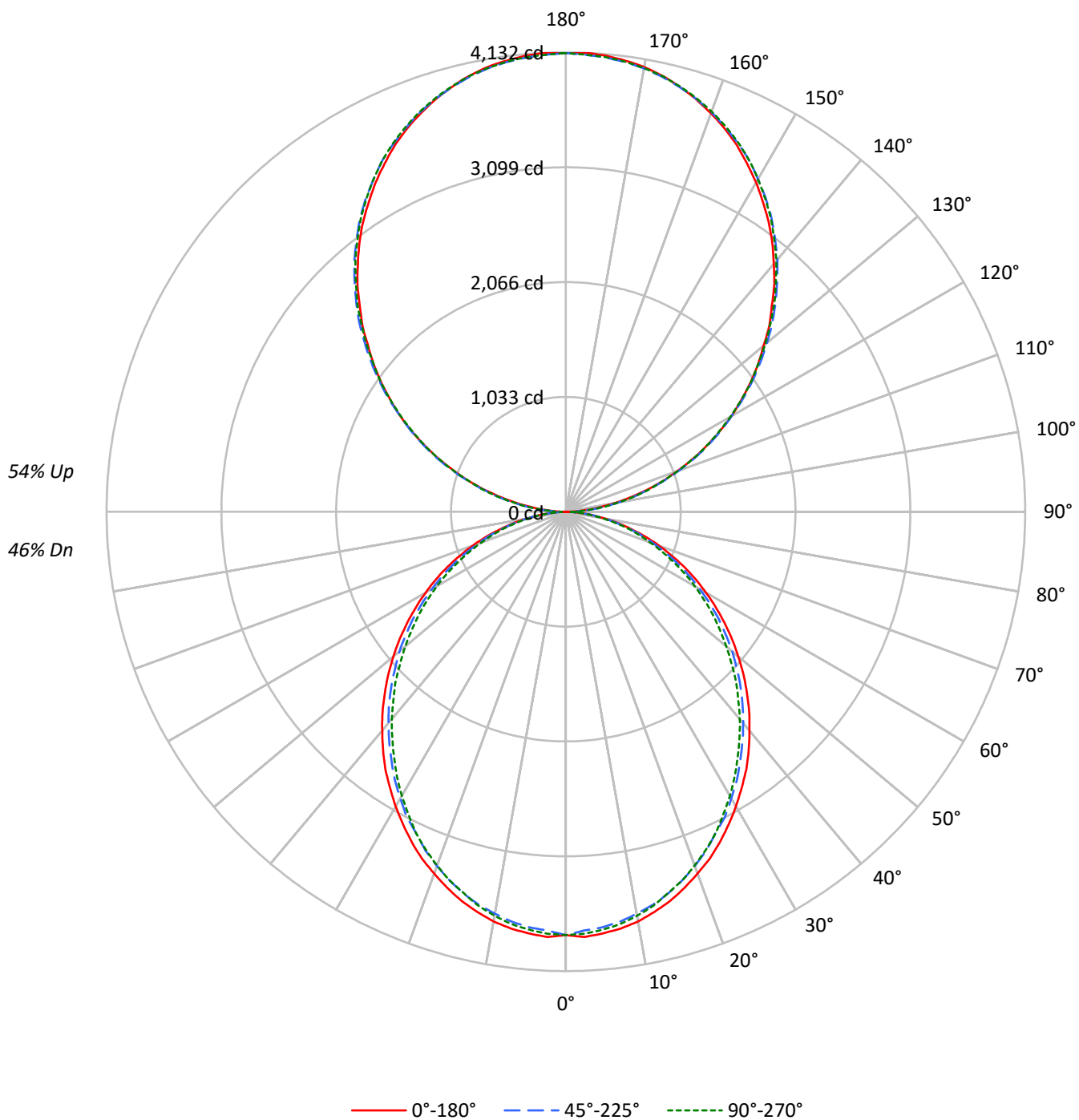
Lumens per Lamp: N/A
Luminaire Lumens: 21231.2 lumens
Efficiency: N/A
Efficacy: 88.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 239.7
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9933
Total Harmonic Distortion (THDi): 0.066
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	81	81	81	66	66	66	52	52	52
1	97	93	89	85	89	85	82	79	71	69	66	58	56	55	46	45	44
2	88	81	75	70	81	74	69	65	62	58	55	51	48	46	41	39	37
3	80	71	64	58	73	65	59	54	55	50	46	45	42	39	36	34	32
4	74	63	55	49	67	58	51	46	49	43	39	40	36	33	32	29	27
5	67	56	48	42	62	52	45	39	44	38	34	36	32	29	29	26	24
6	62	50	42	36	57	46	39	34	39	34	30	33	28	25	26	23	21
7	57	45	37	32	53	42	35	30	36	30	26	30	25	22	24	21	19
8	53	41	33	28	49	38	31	26	32	27	23	27	23	20	22	19	17
9	50	37	30	25	45	35	28	24	30	24	21	25	21	18	20	17	15
10	46	34	27	22	42	32	25	21	27	22	19	23	19	16	19	16	14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2671	2671	2671
5°	2675	2634	2652
10°	2654	2600	2617
15°	2615	2557	2562
20°	2562	2498	2505
25°	2509	2428	2440
30°	2444	2362	2356
35°	2381	2285	2267
40°	2305	2206	2183
45°	2228	2128	2097
50°	2144	2046	1997
55°	2057	1950	1906
60°	1958	1837	1801
65°	1850	1721	1677
70°	1712	1578	1544
75°	1522	1407	1423
80°	1293	1191	1188
85°	934	814	799

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3246 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	358.3	1.7
10°-20°	1008.1	4.7
20°-30°	1481.5	7.0
30°-40°	1720.7	8.1
40°-50°	1718.6	8.1
50°-60°	1498.5	7.1
60°-70°	1107.8	5.2
70°-80°	626.7	3.0
80°-90°	177.1	0.8
90°-100°	255.3	1.2
100°-110°	811.2	3.8
110°-120°	1388.2	6.5
120°-130°	1825.7	8.6
130°-140°	2049.3	9.7
140°-150°	2009.6	9.5
150°-160°	1685.7	7.9
160°-170°	1117.9	5.3
170°-180°	390.8	1.8
0°-30°	2848.0	13.4
0°-40°	4568.7	21.5
0°-60°	7785.8	36.7
0°-90°	9697.5	45.7
90°-120°	2454.7	11.6
90°-150°	8339.3	39.3
90°-180°	11534.0	54.3
0°-180°	21231.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3807	3807	3807	3807	3807	
5°	3807	3792	3752	3781	3774	361
15°	3624	3602	3554	3569	3551	1021
25°	3280	3251	3188	3196	3188	1509
35°	2830	2793	2734	2712	2694	1767
45°	2303	2277	2222	2182	2167	1777
55°	1743	1720	1677	1633	1614	1558
65°	1175	1153	1117	1084	1065	1162
75°	615	608	589	567	575	656
85°	150	146	143	132	128	167
90°	4	45	122	114	118	21
95°	182	216	223	223	216	202
105°	749	759	766	772	772	790
115°	1393	1413	1407	1403	1393	1378
125°	2026	2057	2047	2036	2032	1811
135°	2621	2659	2667	2663	2653	2026
145°	3182	3207	3226	3230	3217	1988
155°	3638	3648	3659	3677	3666	1675
165°	3958	3954	3954	3979	3962	1117
175°	4118	4108	4101	4126	4105	391
180°	4126	4126	4126	4126	4126	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3806.9	3806.9	3806.9	3806.9	3806.9
2.5°	3829.0	3810.7	3770.3	3806.9	3799.9
5°	3806.9	3792.4	3752.1	3781.2	3774.2
7.5°	3781.2	3759.4	3719.1	3748.6	3741.2
10°	3741.2	3715.6	3671.7	3700.8	3690.0
12.5°	3686.0	3664.3	3620.4	3638.7	3631.3
15°	3623.9	3602.2	3554.4	3569.1	3550.9
17.5°	3547.0	3525.3	3477.5	3495.8	3477.5
20°	3462.7	3441.0	3389.8	3400.6	3386.3
22.5°	3378.8	3345.8	3298.0	3298.0	3290.7
25°	3279.8	3250.7	3188.5	3195.6	3188.5
27.5°	3169.9	3144.3	3096.9	3086.0	3067.8
30°	3060.4	3030.9	2976.1	2965.2	2950.5
32.5°	2943.1	2921.4	2862.7	2840.6	2825.8
35°	2829.7	2793.2	2734.5	2712.4	2694.2
37.5°	2701.5	2668.6	2609.9	2584.3	2566.0
40°	2569.9	2540.4	2481.7	2449.1	2434.3
42.5°	2441.7	2412.2	2353.9	2317.1	2295.3
45°	2302.6	2277.0	2221.9	2181.9	2167.1
47.5°	2167.1	2141.5	2082.8	2042.5	2020.7
50°	2024.2	2006.0	1954.7	1903.4	1885.1
52.5°	1885.1	1859.5	1812.2	1771.7	1746.1
55°	1742.6	1720.5	1676.6	1632.7	1614.5
57.5°	1599.7	1581.4	1533.7	1489.8	1475.0
60°	1456.8	1442.4	1391.1	1350.8	1339.9
62.5°	1317.8	1292.1	1255.6	1219.1	1204.4
65°	1175.3	1153.1	1116.6	1083.5	1065.4
67.5°	1028.8	1010.2	977.5	951.9	937.2
70°	893.2	878.5	845.5	819.9	805.5
72.5°	754.2	739.5	721.2	695.6	684.7
75°	614.8	607.8	589.1	567.4	574.8
77.5°	490.5	475.7	468.4	457.5	446.6
80°	366.2	362.3	355.0	344.1	336.7
82.5°	248.9	248.9	245.5	230.7	230.7
85°	149.9	146.4	142.9	131.7	128.2
87.5°	66.0	58.6	51.3	40.4	36.5
90°	3.8	44.8	121.9	114.5	118.1
92.5°	77.1	104.5	108.2	111.9	111.9
95°	181.6	216.5	222.7	222.7	216.5
97.5°	302.2	334.6	348.3	348.3	348.3
100°	441.6	470.2	480.1	480.1	476.4
102.5°	588.3	609.5	623.1	626.9	623.1
105°	748.8	758.7	766.2	772.4	772.4
107.5°	908.0	922.9	922.9	925.4	908.0
110°	1062.3	1082.1	1082.1	1082.1	1072.2

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1228.9	1250.1	1246.3	1236.4	1228.9
115°	1393.1	1413.0	1406.8	1403.0	1393.1
117.5°	1556.1	1583.4	1566.0	1556.1	1546.1
120°	1720.3	1747.6	1720.3	1720.3	1709.0
122.5°	1869.5	1904.4	1886.9	1877.0	1869.5
125°	2026.3	2057.3	2047.4	2036.2	2032.5
127.5°	2179.2	2217.8	2204.1	2189.2	2179.2
130°	2322.3	2367.1	2360.9	2353.4	2339.7
132.5°	2482.7	2517.6	2520.0	2502.6	2492.7
135°	2620.8	2659.3	2666.8	2663.1	2653.1
137.5°	2775.0	2806.1	2812.4	2809.8	2794.9
140°	2910.6	2941.7	2959.1	2959.1	2945.4
142.5°	3049.9	3081.0	3091.0	3094.7	3081.0
145°	3181.8	3206.6	3226.5	3230.3	3216.6
147.5°	3299.9	3331.1	3346.0	3352.2	3338.5
150°	3421.8	3443.0	3456.7	3467.9	3456.7
152.5°	3530.1	3551.2	3568.6	3582.3	3568.6
155°	3638.3	3648.2	3659.4	3676.8	3665.7
157.5°	3731.5	3739.0	3745.2	3770.1	3752.7
160°	3814.9	3822.4	3826.1	3847.2	3832.3
162.5°	3892.0	3892.0	3895.7	3919.4	3901.9
165°	3957.9	3954.2	3954.2	3979.1	3961.7
167.5°	4017.6	4006.5	4006.5	4031.3	4013.9
170°	4062.4	4052.4	4048.8	4073.6	4052.4
172.5°	4093.5	4083.6	4079.8	4104.7	4083.6
175°	4118.4	4108.5	4101.0	4125.9	4104.7
177.5°	4132.1	4122.1	4114.6	4135.8	4114.6
180°	4125.9	4125.9	4125.9	4125.9	4125.9

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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	10.28	11.11	11.28	12.11	13.44	9.84	10.66	10.83	11.67	13.00
	3H	11.94	12.68	12.95	13.70	15.05	11.45	12.19	12.46	13.21	14.56
	4H	12.53	13.23	13.55	14.25	15.61	12.04	12.74	13.06	13.76	15.12
	6H	12.93	13.58	13.96	14.60	15.97	12.43	13.08	13.46	14.10	15.47
	8H	13.04	13.65	14.07	14.69	16.06	12.54	13.15	13.57	14.19	15.56
	12H	13.09	13.67	14.13	14.70	16.10	12.58	13.16	13.62	14.19	15.59
4H	2H	10.74	11.44	11.76	12.46	13.82	10.38	11.08	11.41	12.10	13.46
	3H	12.61	13.19	13.64	14.24	15.61	12.20	12.78	13.23	13.83	15.20
	4H	13.32	13.86	14.36	14.90	16.29	12.90	13.43	13.94	14.47	15.87
	6H	13.84	14.30	14.89	15.36	16.75	13.41	13.87	14.46	14.93	16.32
	8H	13.99	14.42	15.04	15.47	16.88	13.55	13.98	14.60	15.04	16.44
	12H	14.06	14.45	15.13	15.52	16.93	13.62	14.00	14.68	15.07	16.48
8H	4H	13.52	13.95	14.57	15.00	16.41	13.14	13.57	14.19	14.62	16.03
	6H	14.15	14.51	15.22	15.60	17.01	13.77	14.12	14.84	15.22	16.62
	8H	14.37	14.69	15.46	15.77	17.19	13.98	14.29	15.06	15.37	16.80
	12H	14.51	14.78	15.59	15.86	17.32	14.10	14.37	15.18	15.45	16.91
12H	4H	13.50	13.89	14.57	14.96	16.37	13.13	13.52	14.20	14.59	16.00
	6H	14.18	14.49	15.26	15.57	17.00	13.81	14.12	14.89	15.20	16.63
	8H	14.42	14.70	15.51	15.77	17.24	14.04	14.32	15.13	15.39	16.86

END OF REPORT