

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: P906936

Luminaire Tested: DFN2DIP-SQ4F0-140D110US835-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P906936
REPORT IS A COMBINATION OF REPORTS P900163 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-140D110US835-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

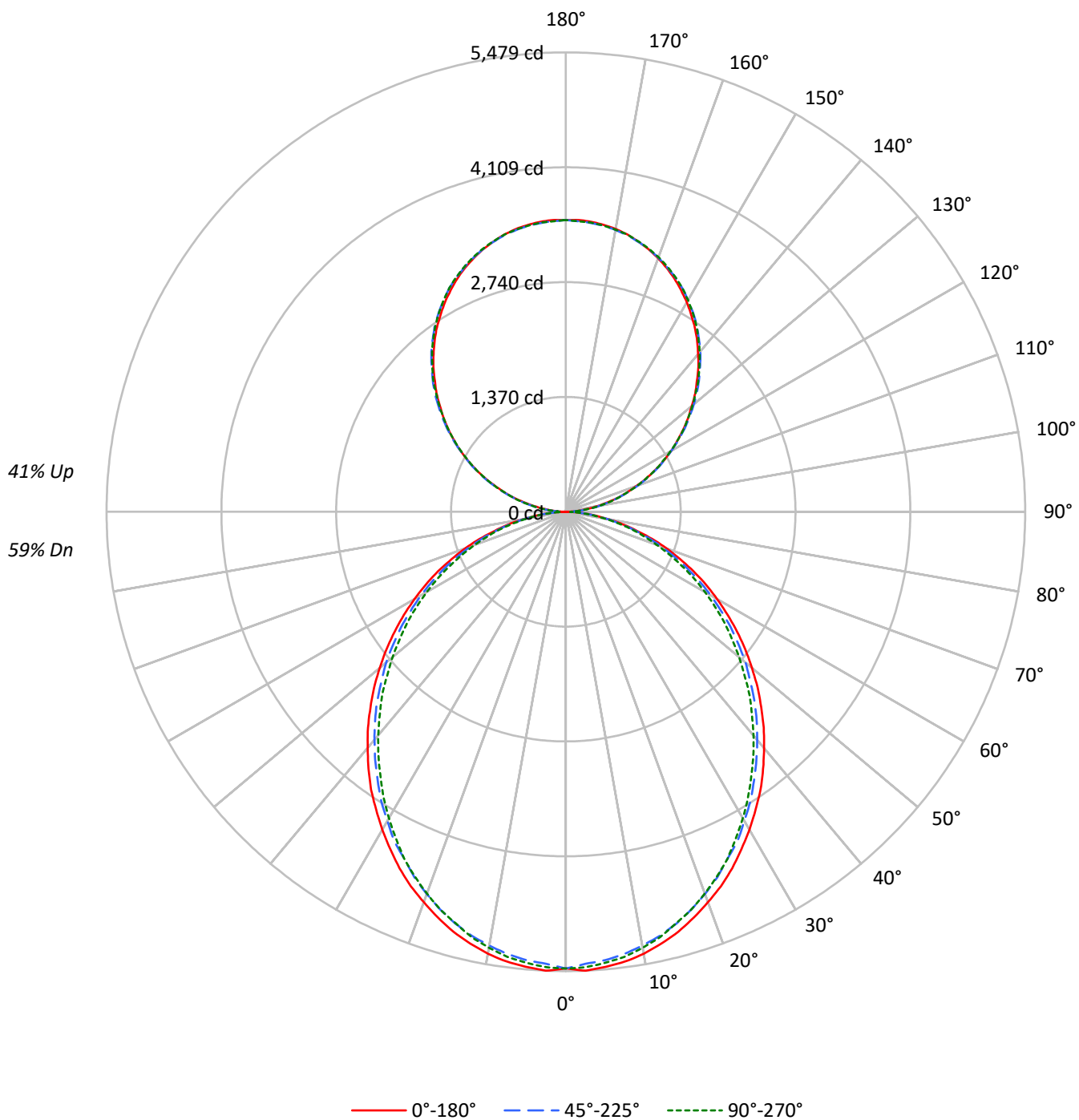
Lumens per Lamp: N/A
Luminaire Lumens: 23595.0 lumens
Efficiency: N/A
Efficacy: 104.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 226.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
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	109	109	109	109	102	102	102	102	88	88	88	76	76	76	64	64	64
1	100	95	91	88	93	89	86	83	77	75	73	67	65	63	57	55	54
2	91	83	77	72	84	78	72	68	68	64	60	59	55	53	50	48	46
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	44	41	39
4	76	65	57	51	70	61	54	48	53	48	43	46	42	38	40	36	34
5	70	58	50	44	65	54	47	41	48	42	37	41	37	33	36	32	29
6	64	52	44	38	60	49	41	36	43	37	33	38	33	29	32	29	26
7	59	47	39	33	55	44	37	32	39	33	29	34	29	26	30	26	23
8	55	43	35	29	51	40	33	28	36	30	26	31	27	23	27	23	21
9	51	39	31	26	48	37	30	25	33	27	23	29	24	21	25	21	19
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	23	20	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3822	3822	3822
5°	3828	3770	3796
10°	3797	3720	3745
15°	3741	3659	3666
20°	3666	3575	3585
25°	3591	3474	3491
30°	3497	3380	3371
35°	3408	3269	3244
40°	3298	3157	3124
45°	3188	3045	3001
50°	3069	2927	2858
55°	2943	2791	2727
60°	2802	2629	2577
65°	2647	2462	2400
70°	2450	2258	2210
75°	2178	2014	2036
80°	1850	1704	1701
85°	1337	1165	1143

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3188 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	512.7	2.2
10°-20°	1442.6	6.1
20°-30°	2120.0	9.0
30°-40°	2462.3	10.4
40°-50°	2459.3	10.4
50°-60°	2144.4	9.1
60°-70°	1585.2	6.7
70°-80°	896.9	3.8
80°-90°	246.6	1.0
90°-100°	215.3	0.9
100°-110°	684.0	2.9
110°-120°	1170.5	5.0
120°-130°	1539.4	6.5
130°-140°	1727.9	7.3
140°-150°	1694.4	7.2
150°-160°	1421.4	6.0
160°-170°	942.6	4.0
170°-180°	329.5	1.4
0°-30°	4075.3	17.3
0°-40°	6537.6	27.7
0°-60°	11141.3	47.2
0°-90°	13869.9	58.8
90°-120°	2069.8	8.8
90°-150°	7031.6	29.8
90°-180°	9725.0	41.2
0°-180°	23595.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5448	5448	5448	5448	5448	
5°	5448	5427	5369	5411	5401	517
15°	5186	5155	5086	5107	5081	1461
25°	4693	4652	4563	4573	4563	2160
35°	4049	3997	3913	3881	3855	2529
45°	3295	3258	3180	3122	3101	2543
55°	2494	2462	2399	2336	2310	2229
65°	1682	1650	1598	1550	1524	1663
75°	880	870	843	812	822	939
85°	214	210	204	188	183	239
90°	3	38	103	96	100	23
95°	153	182	188	188	182	170
105°	631	640	646	651	651	666
115°	1175	1191	1186	1183	1175	1162
125°	1708	1735	1726	1717	1714	1527
135°	2210	2242	2249	2246	2237	1708
145°	2683	2704	2721	2724	2712	1676
155°	3068	3076	3086	3100	3091	1412
165°	3337	3334	3334	3355	3340	941
175°	3473	3464	3458	3479	3461	330
180°	3479	3479	3479	3479	3479	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5447.5	5447.5	5447.5	5447.5	5447.5
2.5°	5479.1	5453.0	5395.2	5447.5	5437.5
5°	5447.5	5426.9	5369.1	5410.8	5400.8
7.5°	5410.8	5379.7	5321.9	5364.1	5353.5
10°	5353.5	5316.9	5254.1	5295.8	5280.2
12.5°	5274.6	5243.5	5180.7	5206.8	5196.3
15°	5185.7	5154.6	5086.2	5107.4	5081.2
17.5°	5075.7	5044.6	4976.2	5002.3	4976.2
20°	4955.1	4924.0	4850.6	4866.2	4845.6
22.5°	4835.0	4787.8	4719.4	4719.4	4708.9
25°	4693.3	4651.6	4562.7	4572.7	4562.7
27.5°	4536.0	4499.4	4431.6	4416.0	4389.9
30°	4379.3	4337.1	4258.7	4243.2	4222.0
32.5°	4211.5	4180.4	4096.4	4064.8	4043.6
35°	4049.2	3997.0	3913.0	3881.4	3855.2
37.5°	3865.8	3818.6	3734.6	3698.0	3671.8
40°	3677.4	3635.2	3551.2	3504.6	3483.4
42.5°	3494.0	3451.8	3368.4	3315.6	3284.5
45°	3295.0	3258.4	3179.5	3122.2	3101.1
47.5°	3101.1	3064.4	2980.5	2922.7	2891.6
50°	2896.6	2870.5	2797.1	2723.7	2697.6
52.5°	2697.6	2660.9	2593.1	2535.3	2498.7
55°	2493.7	2462.0	2399.2	2336.4	2310.3
57.5°	2289.1	2263.0	2194.7	2131.9	2110.7
60°	2084.6	2064.1	1990.7	1932.9	1917.3
62.5°	1885.7	1849.0	1796.7	1744.5	1723.4
65°	1681.7	1650.0	1597.8	1550.5	1524.4
67.5°	1472.2	1445.5	1398.8	1362.1	1341.0
70°	1278.2	1257.1	1209.9	1173.2	1152.6
72.5°	1079.3	1058.1	1032.0	995.4	979.8
75°	879.8	869.8	843.1	812.0	822.5
77.5°	701.9	680.8	670.2	654.7	639.1
80°	524.1	518.5	508.0	492.4	481.8
82.5°	356.2	356.2	351.2	330.1	330.1
85°	214.5	209.5	204.5	188.4	183.4
87.5°	94.5	83.9	73.4	57.8	52.2
90°	3.1	37.8	102.8	96.5	99.6
92.5°	65.0	88.1	91.2	94.4	94.4
95°	153.1	182.5	187.7	187.7	182.5
97.5°	254.9	282.1	293.7	293.7	293.7
100°	372.3	396.4	404.8	404.8	401.7
102.5°	496.1	513.9	525.5	528.6	525.5
105°	631.4	639.8	646.1	651.3	651.3
107.5°	765.6	778.2	778.2	780.3	765.6
110°	895.7	912.5	912.5	912.5	904.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1036.2	1054.0	1050.9	1042.5	1036.2
115°	1174.7	1191.4	1186.2	1183.1	1174.7
117.5°	1312.1	1335.1	1320.4	1312.1	1303.7
120°	1450.5	1473.6	1450.5	1450.5	1441.1
122.5°	1576.4	1605.7	1591.0	1582.6	1576.4
125°	1708.5	1734.7	1726.3	1716.9	1713.7
127.5°	1837.5	1870.0	1858.5	1845.9	1837.5
130°	1958.1	1995.9	1990.6	1984.3	1972.8
132.5°	2093.4	2122.8	2124.9	2110.2	2101.8
135°	2209.8	2242.3	2248.6	2245.5	2237.1
137.5°	2339.9	2366.1	2371.3	2369.2	2356.7
140°	2454.2	2480.4	2495.1	2495.1	2483.6
142.5°	2571.7	2597.9	2606.3	2609.4	2597.9
145°	2682.8	2703.8	2720.6	2723.7	2712.2
147.5°	2782.5	2808.7	2821.3	2826.5	2815.0
150°	2885.3	2903.1	2914.6	2924.1	2914.6
152.5°	2976.5	2994.3	3009.0	3020.6	3009.0
155°	3067.8	3076.1	3085.6	3100.3	3090.8
157.5°	3146.4	3152.7	3157.9	3178.9	3164.2
160°	3216.7	3223.0	3226.1	3244.0	3231.4
162.5°	3281.7	3281.7	3284.9	3304.8	3290.1
165°	3337.3	3334.1	3334.1	3355.1	3340.4
167.5°	3387.6	3378.2	3378.2	3399.2	3384.5
170°	3425.4	3417.0	3413.9	3434.8	3417.0
172.5°	3451.6	3443.2	3440.1	3461.1	3443.2
175°	3472.6	3464.2	3457.9	3478.9	3461.1
177.5°	3484.1	3475.7	3469.4	3487.3	3469.4
180°	3478.9	3478.9	3478.9	3478.9	3478.9

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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	12.72	13.66	13.59	14.56	15.70	12.27	13.22	13.15	14.12	15.26
	3H	14.39	15.24	15.28	16.14	17.31	13.90	14.75	14.79	15.65	16.82
	4H	14.98	15.78	15.89	16.70	17.87	14.49	15.29	15.39	16.20	17.38
	6H	15.39	16.13	16.31	17.05	18.24	14.89	15.63	15.81	16.55	17.74
	8H	15.50	16.20	16.42	17.14	18.33	15.00	15.70	15.92	16.64	17.83
	12H	15.55	16.22	16.48	17.15	18.37	15.04	15.71	15.97	16.64	17.86
4H	2H	13.19	13.99	14.10	14.90	16.08	12.83	13.64	13.74	14.55	15.72
	3H	15.07	15.74	15.99	16.68	17.87	14.66	15.33	15.58	16.27	17.46
	4H	15.79	16.40	16.72	17.34	18.55	15.36	15.97	16.29	16.91	18.13
	6H	16.31	16.84	17.26	17.80	19.02	15.88	16.41	16.82	17.37	18.59
	8H	16.46	16.96	17.41	17.92	19.15	16.03	16.52	16.98	17.48	18.71
	12H	16.54	16.99	17.51	17.96	19.20	16.09	16.54	17.06	17.51	18.75
8H	4H	15.99	16.48	16.94	17.44	18.67	15.61	16.11	16.56	17.06	18.29
	6H	16.63	17.04	17.60	18.04	19.27	16.25	16.66	17.22	17.65	18.88
	8H	16.85	17.22	17.84	18.20	19.45	16.46	16.82	17.45	17.81	19.06
	12H	16.99	17.31	17.98	18.29	19.59	16.58	16.90	17.57	17.88	19.18
12H	4H	15.98	16.43	16.95	17.40	18.64	15.61	16.06	16.58	17.03	18.27
	6H	16.66	17.02	17.64	18.01	19.26	16.29	16.65	17.27	17.64	18.89
	8H	16.91	17.23	17.90	18.21	19.50	16.53	16.85	17.52	17.83	19.12