

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: P909702

Luminaire Tested: DFN2DIP-SQ4F0-160D110US840-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909702
REPORT IS A COMBINATION OF REPORTS P900166 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D110US840-RLLFLL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

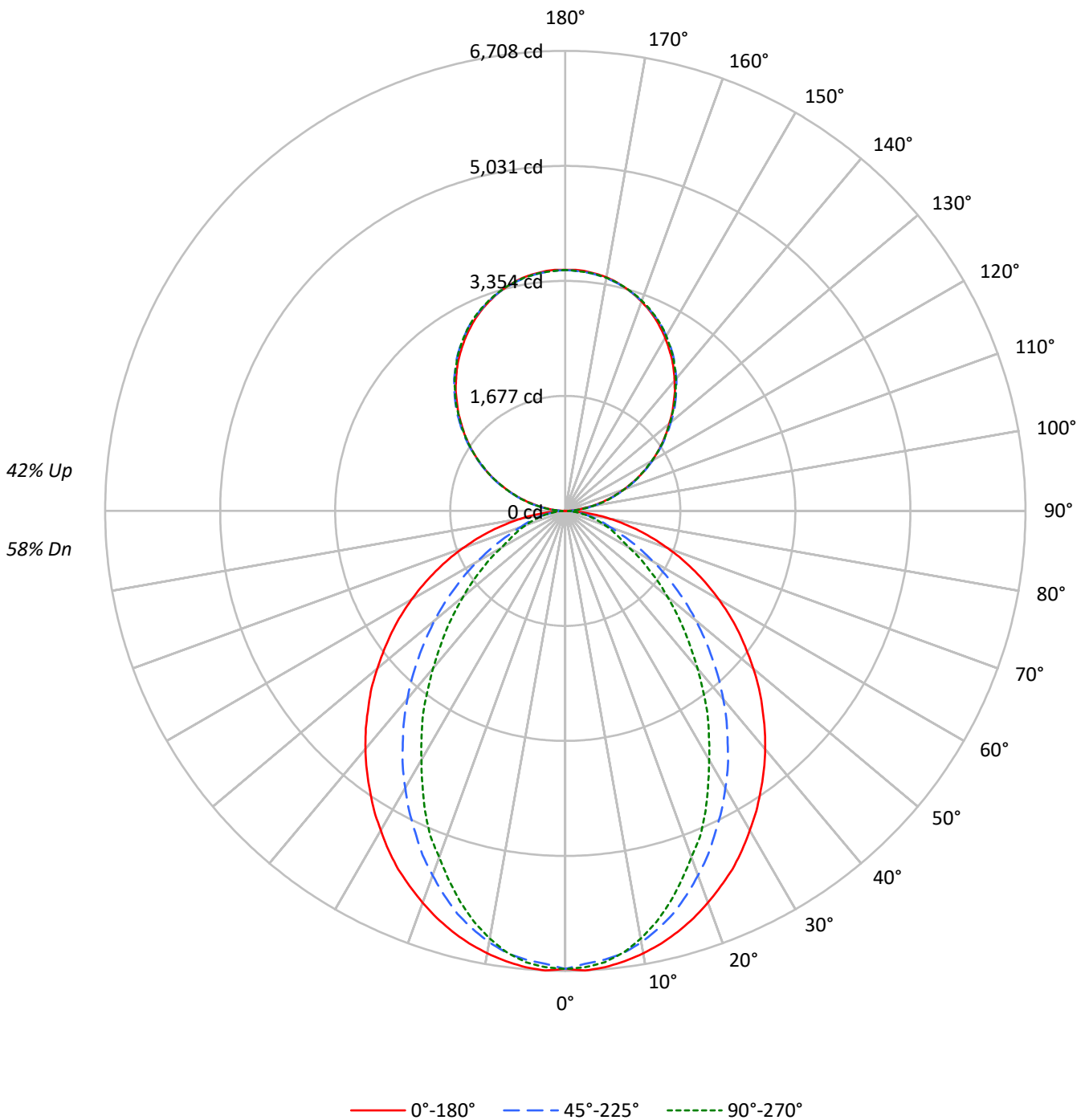
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 23565.2 lumens
Efficiency: N/A
Efficacy: 94.4 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: General Diffuse

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	109	109	109	109	102	102	102	102	88	88	88	75	75	75	64	64	64	58			58
1	100	96	92	89	93	90	87	84	78	76	73	67	65	64	57	56	55	50			50
2	92	85	79	74	85	79	74	70	69	65	62	60	57	54	51	49	47	43			43
3	84	75	68	62	78	70	64	59	61	57	53	53	50	47	46	43	41	37			37
4	77	67	59	53	72	63	56	50	55	50	45	48	44	40	41	38	36	32			32
5	71	60	52	46	66	56	49	44	50	44	40	43	39	35	37	34	31	28			28
6	66	54	46	40	61	51	44	38	45	39	35	39	35	31	34	31	28	25			25
7	61	49	41	36	57	46	39	34	41	35	31	36	31	28	31	28	25	23			23
8	57	45	37	32	53	42	35	30	37	32	28	33	29	25	29	25	23	20			20
9	53	41	33	28	49	39	32	27	34	29	25	31	26	23	27	23	21	19			19
10	50	38	30	26	46	36	29	25	32	26	23	28	24	21	25	21	19	17			17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4686	4686	4686
5°	4693	4612	4642
10°	4647	4523	4493
15°	4583	4374	4260
20°	4498	4169	3975
25°	4411	3939	3699
30°	4295	3703	3349
35°	4181	3449	3041
40°	4065	3186	2688
45°	3930	2894	2368
50°	3790	2600	2056
55°	3645	2285	1755
60°	3476	1955	1446
65°	3282	1621	1303
70°	3047	1308	1181
75°	2752	1155	1078
80°	2324	972	939
85°	1618	654	715

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 3930 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	625.9	2.7
10°-20°	1718.2	7.3
20°-30°	2412.2	10.2
30°-40°	2629.5	11.2
40°-50°	2416.8	10.3
50°-60°	1898.0	8.1
60°-70°	1235.4	5.2
70°-80°	635.9	2.7
80°-90°	172.3	0.7
90°-100°	217.4	0.9
100°-110°	690.8	2.9
110°-120°	1182.1	5.0
120°-130°	1554.6	6.6
130°-140°	1745.0	7.4
140°-150°	1711.2	7.3
150°-160°	1435.4	6.1
160°-170°	951.9	4.0
170°-180°	332.7	1.4
0°-30°	4756.2	20.2
0°-40°	7385.7	31.3
0°-60°	11700.5	49.7
0°-90°	13744.2	58.3
90°-120°	2090.2	8.9
90°-150°	7101.0	30.1
90°-180°	9821.0	41.7
0°-180°	23565.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	6678	6678	6678	6678	6678	
5°	6678	6648	6569	6624	6606	633
15°	6352	6285	6080	5965	5905	1790
25°	5766	5572	5173	4926	4835	2652
35°	4968	4660	4128	3747	3614	3109
45°	4061	3656	3022	2592	2447	3136
55°	3088	2617	1964	1602	1487	2759
65°	2085	1595	1052	846	828	2067
75°	1112	689	483	441	435	1176
85°	260	133	115	115	115	298
90°	3	38	104	98	101	23
95°	155	184	190	190	184	172
105°	638	646	652	658	658	673
115°	1186	1203	1198	1195	1186	1173
125°	1725	1752	1743	1734	1731	1542
135°	2232	2264	2271	2268	2259	1725
145°	2709	2730	2747	2751	2739	1693
155°	3098	3106	3116	3131	3121	1426
165°	3370	3367	3367	3388	3373	951
175°	3507	3498	3492	3513	3495	333
180°	3513	3513	3513	3513	3513	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	6678.0	6678.0	6678.0	6678.0	6678.0
2.5°	6708.1	6678.0	6611.3	6672.3	6660.1
5°	6678.0	6647.8	6569.0	6623.5	6605.5
7.5°	6623.5	6587.6	6502.9	6526.7	6496.6
10°	6551.1	6508.8	6388.2	6369.6	6333.7
12.5°	6460.6	6406.2	6242.7	6206.7	6140.1
15°	6351.7	6285.0	6079.8	5965.0	5904.7
17.5°	6224.7	6127.9	5874.0	5741.2	5644.4
20°	6079.8	5958.6	5656.6	5505.9	5372.6
22.5°	5922.7	5783.5	5432.8	5227.7	5137.2
25°	5765.6	5571.9	5173.1	4925.6	4834.6
27.5°	5578.4	5372.6	4931.4	4647.4	4508.2
30°	5378.9	5148.8	4665.3	4357.6	4194.1
32.5°	5185.4	4907.0	4412.0	4049.2	3897.8
35°	4967.9	4659.5	4128.0	3747.1	3613.8
37.5°	4756.4	4423.6	3861.9	3444.4	3293.8
40°	4532.6	4170.3	3583.6	3154.6	2997.6
42.5°	4303.0	3916.4	3306.0	2858.4	2707.8
45°	4061.3	3656.1	3021.9	2592.3	2447.4
47.5°	3831.7	3402.8	2750.1	2320.5	2187.8
50°	3577.9	3148.9	2484.0	2066.6	1940.3
52.5°	3329.7	2876.4	2230.1	1831.3	1716.5
55°	3088.0	2616.7	1964.0	1601.6	1486.9
57.5°	2840.4	2357.0	1728.7	1390.1	1293.2
60°	2586.6	2103.1	1480.5	1172.8	1075.9
62.5°	2339.1	1855.6	1268.9	979.1	931.0
65°	2085.2	1595.3	1051.6	846.4	827.8
67.5°	1843.4	1353.5	846.4	743.2	725.2
70°	1589.5	1118.2	700.8	640.6	616.2
72.5°	1347.8	900.2	586.0	538.0	525.7
75°	1111.9	688.6	483.4	441.1	435.4
77.5°	876.5	489.2	380.8	356.5	344.4
80°	658.5	350.7	289.8	266.1	266.1
82.5°	459.1	236.0	199.4	187.2	187.2
85°	259.6	132.7	114.8	114.8	114.8
87.5°	96.8	48.1	48.1	42.3	42.3
90°	3.1	38.2	103.8	97.5	100.6
92.5°	65.6	89.0	92.1	95.3	95.3
95°	154.6	184.3	189.6	189.6	184.3
97.5°	257.4	284.9	296.6	296.6	296.6
100°	376.0	400.3	408.8	408.8	405.7
102.5°	501.0	519.0	530.7	533.8	530.7
105°	637.6	646.1	652.5	657.7	657.7
107.5°	773.2	785.9	785.9	788.0	773.2
110°	904.5	921.5	921.5	921.5	913.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1046.4	1064.4	1061.3	1052.8	1046.4
115°	1186.3	1203.2	1197.9	1194.8	1186.3
117.5°	1325.0	1348.3	1333.4	1325.0	1316.6
120°	1464.8	1488.1	1464.8	1464.8	1455.3
122.5°	1592.0	1621.5	1606.7	1598.2	1592.0
125°	1725.4	1751.8	1743.3	1733.8	1730.6
127.5°	1855.6	1888.4	1876.8	1864.1	1855.6
130°	1977.4	2015.6	2010.2	2003.9	1992.3
132.5°	2114.1	2143.7	2145.9	2131.0	2122.5
135°	2231.6	2264.4	2270.8	2267.7	2259.2
137.5°	2363.0	2389.4	2394.7	2392.6	2380.0
140°	2478.4	2504.9	2519.7	2519.7	2508.1
142.5°	2597.1	2623.5	2632.0	2635.1	2623.5
145°	2709.3	2730.5	2747.4	2750.6	2739.0
147.5°	2810.0	2836.4	2849.1	2854.4	2842.8
150°	2913.8	2931.7	2943.4	2952.9	2943.4
152.5°	3005.9	3023.8	3038.7	3050.4	3038.7
155°	3098.1	3106.4	3116.0	3130.9	3121.3
157.5°	3177.4	3183.8	3189.1	3210.3	3195.4
160°	3248.4	3254.8	3257.9	3276.0	3263.3
162.5°	3314.1	3314.1	3317.3	3337.4	3322.6
165°	3370.2	3367.0	3367.0	3388.2	3373.4
167.5°	3421.0	3411.5	3411.5	3432.7	3417.9
170°	3459.2	3450.7	3447.6	3468.7	3450.7
172.5°	3485.7	3477.2	3474.0	3495.2	3477.2
175°	3506.9	3498.4	3492.0	3513.2	3495.2
177.5°	3518.5	3510.0	3503.6	3521.7	3503.6
180°	3513.2	3513.2	3513.2	3513.2	3513.2



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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	13.27	14.17	14.16	15.08	16.23	9.23	10.13	10.12	11.04	12.19
	3H	14.96	15.76	15.86	16.68	17.85	10.42	11.23	11.33	12.15	13.32
	4H	15.57	16.33	16.49	17.25	18.44	10.88	11.64	11.80	12.56	13.75
	6H	16.00	16.70	16.93	17.63	18.83	11.20	11.91	12.13	12.83	14.03
	8H	16.13	16.80	17.07	17.74	18.94	11.30	11.96	12.23	12.91	14.10
	12H	16.20	16.83	17.14	17.77	18.99	11.34	11.98	12.28	12.91	14.14
4H	2H	13.30	14.06	14.22	14.98	16.16	9.84	10.60	10.76	11.52	12.70
	3H	15.14	15.77	16.07	16.72	17.92	11.19	11.83	12.13	12.78	13.98
	4H	15.83	16.41	16.78	17.36	18.58	11.75	12.32	12.69	13.27	14.49
	6H	16.36	16.85	17.31	17.82	19.05	12.17	12.67	13.13	13.64	14.86
	8H	16.54	17.00	17.49	17.96	19.20	12.30	12.76	13.26	13.73	14.97
	12H	16.64	17.06	17.61	18.04	19.28	12.37	12.79	13.35	13.77	15.01
8H	4H	15.81	16.27	16.77	17.23	18.47	12.03	12.50	12.99	13.46	14.70
	6H	16.38	16.76	17.36	17.77	19.01	12.56	12.94	13.54	13.94	15.18
	8H	16.60	16.94	17.59	17.93	19.19	12.75	13.09	13.74	14.08	15.34
	12H	16.75	17.04	17.74	18.03	19.33	12.87	13.17	13.87	14.16	15.46
12H	4H	15.76	16.18	16.74	17.16	18.40	12.04	12.46	13.02	13.44	14.68
	6H	16.36	16.70	17.35	17.69	18.94	12.61	12.94	13.60	13.94	15.19
	8H	16.58	16.88	17.58	17.87	19.17	12.82	13.12	13.82	14.11	15.41