

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: P909460

Luminaire Tested: DFN2DIP-SQ4F0-070D160US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909460
REPORT IS A COMBINATION OF REPORTS P900205 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-070D160US840-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

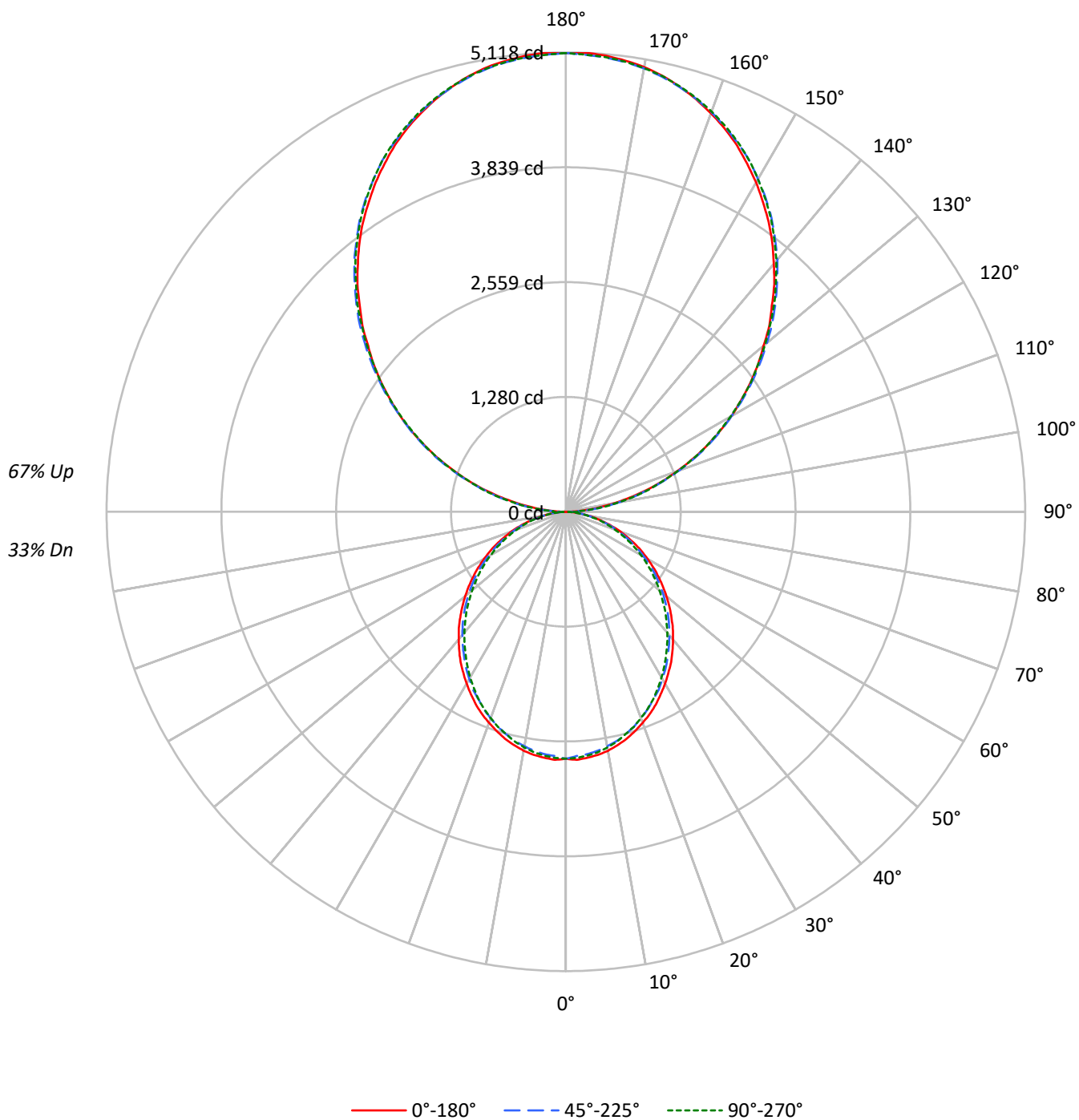
Lumens per Lamp: N/A
Luminaire Lumens: 21299.1 lumens
Efficiency: N/A
Efficacy: 116.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 183.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P909460

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US840-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P909460

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US840-FLLFL

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	103	103	103	103	93	93	93	93	74	74	74	56	56	56	40	40	40
1	94	90	86	83	85	81	78	75	65	62	60	50	48	47	36	35	34
2	86	78	72	67	77	71	66	61	57	53	50	43	41	39	31	30	29
3	78	69	62	56	70	62	56	51	50	46	42	38	36	33	28	26	24
4	71	61	53	47	64	55	48	43	44	39	36	34	31	28	25	23	21
5	65	54	46	40	59	49	42	37	39	35	31	31	27	24	22	20	18
6	60	48	40	35	54	44	37	32	36	30	27	28	24	21	20	18	16
7	55	44	36	30	50	40	33	28	32	27	23	25	21	19	18	16	14
8	51	39	32	27	46	36	29	25	29	24	21	23	19	17	17	15	13
9	48	36	29	24	43	33	26	22	27	22	18	21	17	15	16	13	12
10	45	33	26	21	40	30	24	20	25	20	17	19	16	13	14	12	10

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1930	1930	1930
5°	1933	1904	1917
10°	1917	1878	1891
15°	1889	1848	1851
20°	1851	1805	1810
25°	1813	1754	1763
30°	1766	1707	1702
35°	1721	1651	1638
40°	1665	1594	1577
45°	1610	1538	1515
50°	1549	1478	1443
55°	1486	1409	1377
60°	1415	1328	1301
65°	1337	1243	1212
70°	1237	1140	1116
75°	1099	1017	1028
80°	934	860	859
85°	676	589	577

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 4021 cd/sqm

TEST NUMBER: P909460

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US840-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	258.9	1.2
10°-20°	728.4	3.4
20°-30°	1070.5	5.0
30°-40°	1243.3	5.8
40°-50°	1241.7	5.8
50°-60°	1082.8	5.1
60°-70°	800.4	3.8
70°-80°	452.9	2.1
80°-90°	134.1	0.6
90°-100°	316.2	1.5
100°-110°	1004.8	4.7
110°-120°	1719.5	8.1
120°-130°	2261.4	10.6
130°-140°	2538.3	11.9
140°-150°	2489.1	11.7
150°-160°	2088.0	9.8
160°-170°	1384.7	6.5
170°-180°	484.0	2.3
0°-30°	2057.8	9.7
0°-40°	3301.1	15.5
0°-60°	5625.6	26.4
0°-90°	7012.9	32.9
90°-120°	3040.5	14.3
90°-150°	10329.4	48.5
90°-180°	14286.0	67.1
0°-180°	21299.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2751	2751	2751	2751	2751	
5°	2751	2740	2711	2732	2727	261
15°	2618	2603	2568	2579	2566	737
25°	2370	2349	2304	2309	2304	1090
35°	2045	2018	1976	1960	1947	1277
45°	1664	1645	1605	1576	1566	1284
55°	1259	1243	1211	1180	1166	1126
65°	849	833	807	783	770	840
75°	444	439	426	410	415	474
85°	108	106	103	95	93	121
90°	5	55	151	142	146	21
95°	225	268	276	276	268	250
105°	928	940	949	957	957	979
115°	1726	1750	1742	1738	1726	1707
125°	2510	2548	2536	2522	2518	2243
135°	3246	3294	3303	3299	3286	2509
145°	3941	3972	3996	4001	3984	2462
155°	4506	4519	4533	4554	4540	2074
165°	4902	4898	4898	4929	4907	1383
175°	5101	5089	5080	5110	5084	485
180°	5110	5110	5110	5110	5110	

TEST NUMBER: P909460

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US840-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2750.6	2750.6	2750.6	2750.6	2750.6
2.5°	2766.6	2753.4	2724.2	2750.6	2745.5
5°	2750.6	2740.3	2711.1	2732.1	2727.0
7.5°	2732.1	2716.3	2687.2	2708.6	2703.2
10°	2703.2	2684.6	2652.9	2674.0	2666.1
12.5°	2663.3	2647.7	2616.0	2629.1	2623.7
15°	2618.5	2602.7	2568.2	2578.9	2565.7
17.5°	2562.8	2547.2	2512.6	2525.9	2512.6
20°	2501.9	2486.3	2449.2	2457.1	2446.7
22.5°	2441.3	2417.5	2383.0	2383.0	2377.6
25°	2369.9	2348.7	2303.9	2309.0	2303.9
27.5°	2290.4	2271.9	2237.7	2229.8	2216.6
30°	2211.3	2189.9	2150.4	2142.5	2131.8
32.5°	2126.5	2110.8	2068.4	2052.5	2041.7
35°	2044.6	2018.2	1975.8	1959.8	1946.6
37.5°	1952.0	1928.1	1885.7	1867.2	1854.0
40°	1856.8	1835.5	1793.1	1769.6	1758.9
42.5°	1764.2	1742.9	1700.8	1674.2	1658.4
45°	1663.8	1645.3	1605.4	1576.5	1565.8
47.5°	1565.8	1547.3	1504.9	1475.7	1460.1
50°	1462.6	1449.4	1412.3	1375.3	1362.1
52.5°	1362.1	1343.6	1309.4	1280.2	1261.6
55°	1259.1	1243.1	1211.4	1179.7	1166.5
57.5°	1155.9	1142.7	1108.1	1076.4	1065.8
60°	1052.6	1042.2	1005.2	976.0	968.2
62.5°	952.1	933.6	907.3	880.9	870.2
65°	849.2	833.1	806.8	782.9	769.7
67.5°	743.4	729.9	706.3	687.8	677.1
70°	645.4	634.8	610.9	592.4	582.0
72.5°	544.9	534.3	521.1	502.6	494.7
75°	444.2	439.2	425.7	410.0	415.4
77.5°	354.5	343.8	338.4	330.5	322.8
80°	264.6	261.9	256.5	248.6	243.3
82.5°	179.9	179.9	177.3	166.7	166.7
85°	108.4	105.8	103.3	95.1	92.6
87.5°	47.7	42.4	37.1	29.2	26.4
90°	4.6	55.4	151.0	141.8	146.3
92.5°	95.5	129.5	134.0	138.7	138.7
95°	224.9	268.1	275.8	275.8	268.1
97.5°	374.4	414.4	431.4	431.4	431.4
100°	546.9	582.4	594.7	594.7	590.1
102.5°	728.7	755.0	771.8	776.5	771.8
105°	927.5	939.8	949.1	956.7	956.7
107.5°	1124.7	1143.2	1143.2	1146.3	1124.7
110°	1315.8	1340.4	1340.4	1340.4	1328.1

TEST NUMBER: P909460

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US840-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1522.2	1548.4	1543.8	1531.5	1522.2
115°	1725.6	1750.2	1742.5	1737.9	1725.6
117.5°	1927.4	1961.3	1939.7	1927.4	1915.1
120°	2130.8	2164.6	2130.8	2130.8	2116.9
122.5°	2315.6	2358.8	2337.2	2324.9	2315.6
125°	2509.8	2548.3	2536.0	2522.1	2517.5
127.5°	2699.3	2747.0	2730.1	2711.6	2699.3
130°	2876.5	2931.9	2924.3	2915.0	2898.0
132.5°	3075.2	3118.4	3121.4	3099.9	3087.6
135°	3246.2	3294.0	3303.3	3298.6	3286.3
137.5°	3437.3	3475.8	3483.5	3480.4	3461.9
140°	3605.2	3643.7	3665.3	3665.3	3648.3
142.5°	3777.8	3816.3	3828.6	3833.2	3816.3
145°	3941.1	3971.9	3996.5	4001.2	3984.2
147.5°	4087.4	4126.0	4144.5	4152.2	4135.2
150°	4238.4	4264.7	4281.6	4295.5	4281.6
152.5°	4372.5	4398.7	4420.3	4437.1	4420.3
155°	4506.5	4518.8	4532.7	4554.3	4540.5
157.5°	4622.1	4631.3	4639.0	4669.8	4648.3
160°	4725.3	4734.6	4739.2	4765.4	4746.9
162.5°	4820.8	4820.8	4825.4	4854.7	4833.1
165°	4902.5	4897.8	4897.8	4928.6	4907.1
167.5°	4976.4	4962.6	4962.6	4993.4	4971.8
170°	5031.9	5019.5	5015.0	5045.8	5019.5
172.5°	5070.4	5058.1	5053.5	5084.3	5058.1
175°	5101.2	5088.9	5079.6	5110.5	5084.3
177.5°	5118.2	5105.9	5096.6	5122.8	5096.6
180°	5110.5	5110.5	5110.5	5110.5	5110.5

TEST NUMBER: P909460

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US840-FLLFLL

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	7.74	8.46	8.83	9.55	11.05	7.29	8.02	8.38	9.11	10.60
	3H	9.39	10.04	10.49	11.14	12.65	8.90	9.55	10.00	10.65	12.16
	4H	9.98	10.59	11.09	11.69	13.21	9.48	10.10	10.59	11.20	12.72
	6H	10.37	10.94	11.49	12.04	13.57	9.87	10.44	10.99	11.54	13.07
	8H	10.47	11.02	11.60	12.13	13.66	9.97	10.51	11.09	11.63	13.16
	12H	10.52	11.03	11.65	12.15	13.69	10.01	10.52	11.14	11.64	13.18
4H	2H	8.18	8.80	9.30	9.90	11.42	7.83	8.44	8.94	9.54	11.06
	3H	10.04	10.56	11.16	11.68	13.21	9.63	10.15	10.76	11.27	12.80
	4H	10.75	11.23	11.88	12.34	13.89	10.33	10.80	11.46	11.92	13.47
	6H	11.26	11.67	12.40	12.81	14.35	10.83	11.24	11.97	12.38	13.92
	8H	11.41	11.79	12.55	12.92	14.48	10.97	11.35	12.11	12.48	14.04
	12H	11.48	11.83	12.63	12.97	14.53	11.03	11.38	12.18	12.52	14.08
8H	4H	10.94	11.32	12.07	12.45	14.01	10.56	10.94	11.70	12.07	13.63
	6H	11.57	11.88	12.72	13.05	14.61	11.18	11.50	12.34	12.67	14.23
	8H	11.79	12.06	12.95	13.22	14.79	11.40	11.67	12.56	12.82	14.40
	12H	11.92	12.16	13.08	13.31	14.92	11.51	11.75	12.67	12.90	14.51
12H	4H	10.92	11.26	12.07	12.40	13.97	10.55	10.89	11.70	12.03	13.60
	6H	11.60	11.87	12.76	13.02	14.60	11.23	11.50	12.39	12.65	14.23
	8H	11.84	12.08	13.00	13.23	14.84	11.46	11.70	12.62	12.84	14.46