

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: P912152

Luminaire Tested: DFN2DIP-SQ4F0-060D160US850-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912152
REPORT IS A COMBINATION OF REPORTS P900203 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-060D160US850-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

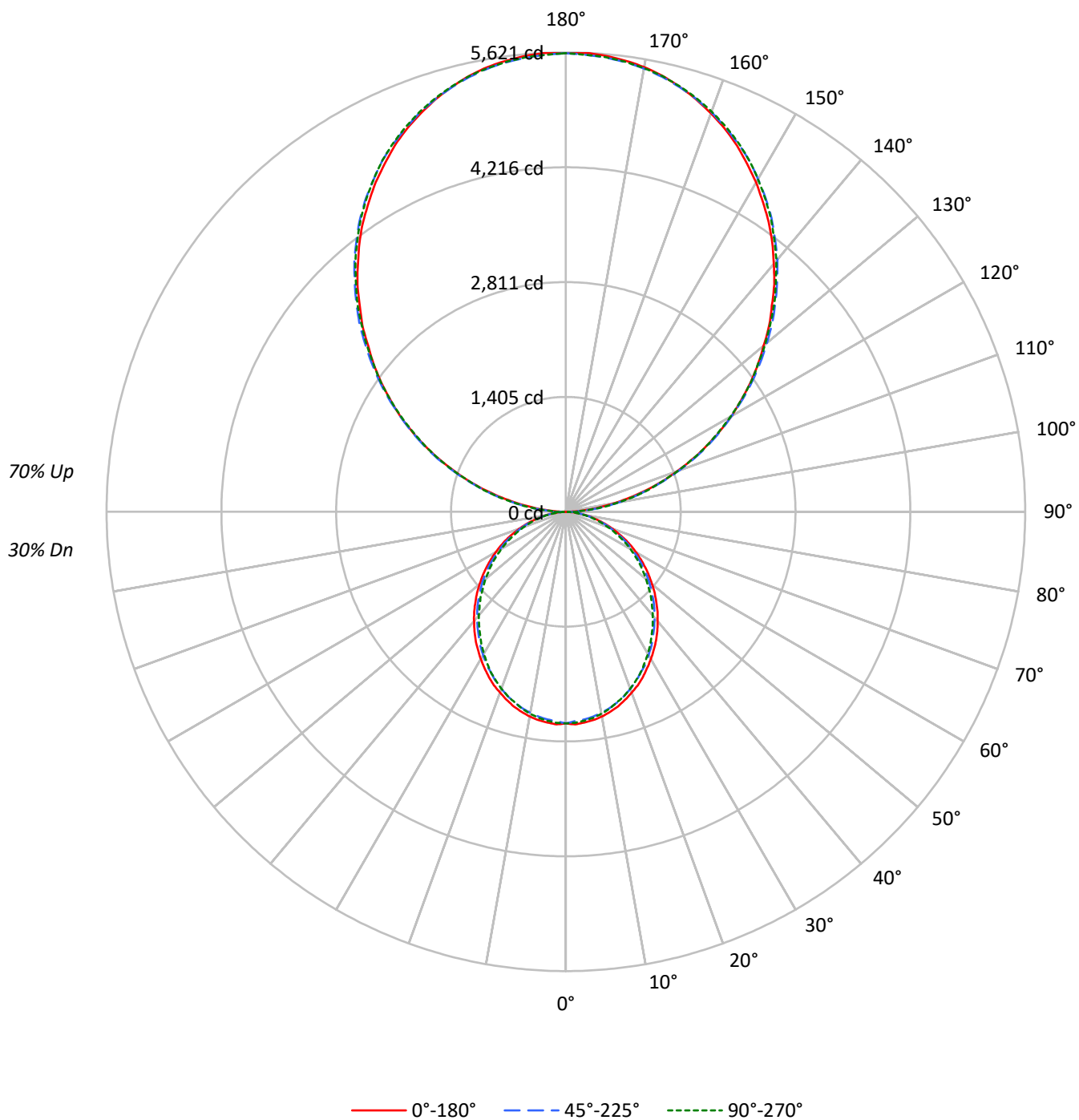
Lumens per Lamp: N/A
Luminaire Lumens: 22291.9 lumens
Efficiency: N/A
Efficacy: 129.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 172.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.946
Total Harmonic Distortion (THDi): 0.132
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P912152

CATALOG NUMBER: DFN2DIP-SQ4F0-060D160US850-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P912152

CATALOG NUMBER: DFN2DIP-SQ4F0-060D160US850-FLLFLL

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	102	102	102	102	92	92	92	92	72	72	72	54	54	54	37	37	37
1	93	89	85	82	83	80	77	74	63	61	59	47	46	45	33	32	32
2	85	78	72	67	76	70	65	61	55	52	49	42	39	37	29	28	27
3	77	68	61	56	69	61	55	51	49	44	41	37	34	32	26	24	23
4	71	60	53	47	63	54	48	43	43	38	35	33	30	27	23	21	19
5	65	54	46	40	58	48	42	37	38	34	30	29	26	23	21	19	17
6	60	48	40	34	53	43	37	32	35	30	26	26	23	20	19	17	15
7	55	43	35	30	49	39	32	28	31	26	23	24	20	18	17	15	13
8	51	39	32	26	46	35	29	24	28	24	20	22	18	16	16	13	12
9	47	35	28	23	42	32	26	22	26	21	18	20	17	14	14	12	11
10	44	32	25	21	40	29	23	19	24	19	16	18	15	13	13	11	10

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1817	1817	1817
5°	1820	1792	1804
10°	1805	1768	1780
15°	1778	1739	1742
20°	1742	1699	1704
25°	1707	1651	1659
30°	1662	1606	1602
35°	1620	1554	1542
40°	1567	1501	1485
45°	1515	1447	1426
50°	1458	1391	1358
55°	1399	1327	1296
60°	1332	1250	1225
65°	1258	1170	1140
70°	1165	1073	1050
75°	1035	957	968
80°	879	810	808
85°	635	553	543

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 4416 cd/sqm

TEST NUMBER: P912152

CATALOG NUMBER: DFN2DIP-SQ4F0-060D160US850-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	243.7	1.1
10°-20°	685.6	3.1
20°-30°	1007.6	4.5
30°-40°	1170.3	5.2
40°-50°	1168.8	5.2
50°-60°	1019.2	4.6
60°-70°	753.4	3.4
70°-80°	426.3	1.9
80°-90°	128.4	0.6
90°-100°	347.3	1.6
100°-110°	1103.4	4.9
110°-120°	1888.3	8.5
120°-130°	2483.4	11.1
130°-140°	2787.5	12.5
140°-150°	2733.5	12.3
150°-160°	2293.0	10.3
160°-170°	1520.7	6.8
170°-180°	531.5	2.4
0°-30°	1937.0	8.7
0°-40°	3107.2	13.9
0°-60°	5295.3	23.8
0°-90°	6603.3	29.6
90°-120°	3339.0	15.0
90°-150°	11343.4	50.9
90°-180°	15689.0	70.4
0°-180°	22291.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2589	2589	2589	2589	2589	
5°	2589	2579	2552	2572	2567	246
15°	2465	2450	2417	2428	2415	694
25°	2231	2211	2168	2173	2168	1026
35°	1925	1900	1860	1845	1832	1202
45°	1566	1549	1511	1484	1474	1209
55°	1185	1170	1140	1110	1098	1060
65°	799	784	759	737	724	790
75°	418	413	401	386	391	446
85°	102	100	97	90	87	114
90°	5	61	166	156	161	22
95°	247	294	303	303	294	275
105°	1018	1032	1042	1051	1051	1075
115°	1895	1922	1914	1908	1895	1874
125°	2756	2798	2785	2770	2765	2463
135°	3565	3617	3628	3622	3609	2756
145°	4328	4362	4389	4394	4375	2704
155°	4949	4962	4978	5001	4986	2278
165°	5384	5379	5379	5412	5389	1519
175°	5602	5588	5578	5612	5583	532
180°	5612	5612	5612	5612	5612	

TEST NUMBER: P912152

CATALOG NUMBER: DFN2DIP-SQ4F0-060D160US850-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2589.1	2589.1	2589.1	2589.1	2589.1
2.5°	2604.2	2591.7	2564.2	2589.1	2584.3
5°	2589.1	2579.3	2551.8	2571.7	2566.9
7.5°	2571.7	2556.9	2529.4	2549.5	2544.5
10°	2544.5	2527.1	2497.1	2517.0	2509.6
12.5°	2507.0	2492.1	2462.3	2474.7	2469.7
15°	2464.6	2449.9	2417.4	2427.5	2415.1
17.5°	2412.4	2397.7	2365.2	2377.5	2365.2
20°	2355.1	2340.3	2305.4	2312.8	2303.1
22.5°	2298.1	2275.6	2243.1	2243.1	2238.1
25°	2230.6	2210.9	2168.5	2173.3	2168.5
27.5°	2155.9	2138.5	2106.2	2098.9	2086.5
30°	2081.5	2061.3	2024.1	2016.7	2006.6
32.5°	2001.6	1986.9	1947.0	1931.9	1921.9
35°	1924.6	1899.7	1859.8	1844.7	1832.3
37.5°	1837.4	1814.9	1775.1	1757.5	1745.1
40°	1747.8	1727.7	1687.9	1665.7	1655.6
42.5°	1660.6	1640.5	1601.0	1575.9	1561.0
45°	1566.1	1548.6	1511.1	1484.0	1473.9
47.5°	1473.9	1456.4	1416.6	1389.1	1374.3
50°	1376.7	1364.3	1329.5	1294.5	1282.1
52.5°	1282.1	1264.7	1232.4	1205.0	1187.6
55°	1185.2	1170.1	1140.3	1110.4	1098.0
57.5°	1088.0	1075.6	1043.1	1013.3	1003.2
60°	990.8	981.0	946.2	918.7	911.3
62.5°	896.2	878.8	853.9	829.1	819.1
65°	799.3	784.3	759.4	736.9	724.5
67.5°	699.7	687.0	664.8	647.4	637.3
70°	607.5	597.5	575.0	557.6	547.8
72.5°	512.9	502.9	490.5	473.1	465.7
75°	418.1	413.4	400.7	385.9	390.9
77.5°	333.6	323.6	318.5	311.2	303.8
80°	249.1	246.4	241.4	234.0	229.0
82.5°	169.3	169.3	166.9	156.9	156.9
85°	101.9	99.6	97.1	89.5	87.2
87.5°	44.9	39.9	34.8	27.5	24.8
90°	5.1	60.9	165.8	155.7	160.7
92.5°	104.9	142.2	147.2	152.3	152.3
95°	247.0	294.4	302.9	302.9	294.4
97.5°	411.1	455.1	473.8	473.8	473.8
100°	600.6	639.6	653.1	653.1	648.0
102.5°	800.3	829.1	847.6	852.7	847.6
105°	1018.5	1032.0	1042.2	1050.7	1050.7
107.5°	1235.1	1255.4	1255.4	1258.8	1235.1
110°	1444.9	1472.0	1472.0	1472.0	1458.4

TEST NUMBER: P912152

CATALOG NUMBER: DFN2DIP-SQ4F0-060D160US850-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1671.6	1700.4	1695.3	1681.8	1671.6
115°	1894.9	1922.0	1913.6	1908.5	1894.9
117.5°	2116.6	2153.8	2130.2	2116.6	2103.1
120°	2340.0	2377.1	2340.0	2340.0	2324.7
122.5°	2542.9	2590.4	2566.7	2553.1	2542.9
125°	2756.2	2798.5	2784.9	2769.7	2764.6
127.5°	2964.2	3016.7	2998.1	2977.8	2964.2
130°	3158.9	3219.8	3211.3	3201.1	3182.5
132.5°	3377.1	3424.5	3427.8	3404.2	3390.7
135°	3564.9	3617.3	3627.5	3622.4	3608.9
137.5°	3774.7	3817.0	3825.5	3822.1	3801.8
140°	3959.1	4001.4	4025.1	4025.1	4006.5
142.5°	4148.7	4190.9	4204.4	4209.5	4190.9
145°	4328.0	4361.8	4388.9	4394.0	4375.3
147.5°	4488.7	4531.0	4551.3	4559.8	4541.1
150°	4654.5	4683.3	4701.9	4717.1	4701.9
152.5°	4801.7	4830.5	4854.2	4872.7	4854.2
155°	4948.9	4962.4	4977.6	5001.4	4986.2
157.5°	5075.8	5086.0	5094.4	5128.2	5104.6
160°	5189.1	5199.3	5204.4	5233.1	5212.9
162.5°	5294.0	5294.0	5299.1	5331.3	5307.6
165°	5383.8	5378.6	5378.6	5412.5	5388.9
167.5°	5464.9	5449.7	5449.7	5483.6	5459.8
170°	5525.8	5512.3	5507.3	5541.1	5512.3
172.5°	5568.2	5554.6	5549.5	5583.4	5554.6
175°	5602.0	5588.5	5578.3	5612.2	5583.4
177.5°	5620.6	5607.1	5596.9	5625.7	5596.9
180°	5612.2	5612.2	5612.2	5612.2	5612.2

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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	7.09	7.79	8.20	8.90	10.44	6.65	7.35	7.76	8.46	9.99
	3H	8.74	9.37	9.87	10.49	12.04	8.25	8.88	9.37	10.00	11.55
	4H	9.33	9.92	10.46	11.04	12.60	8.83	9.43	9.96	10.55	12.11
	6H	9.72	10.27	10.86	11.39	12.96	9.22	9.77	10.36	10.89	12.46
	8H	9.82	10.35	10.97	11.48	13.04	9.32	9.84	10.46	10.98	12.54
	12H	9.87	10.36	11.02	11.49	13.08	9.36	9.86	10.51	10.98	12.57
4H	2H	7.53	8.13	8.67	9.25	10.81	7.18	7.78	8.32	8.89	10.45
	3H	9.39	9.89	10.53	11.03	12.60	8.98	9.48	10.13	10.62	12.19
	4H	10.10	10.56	11.25	11.69	13.28	9.67	10.13	10.82	11.27	12.86
	6H	10.61	11.00	11.76	12.16	13.74	10.18	10.57	11.33	11.73	13.31
	8H	10.76	11.12	11.91	12.27	13.87	10.32	10.69	11.47	11.84	13.43
	12H	10.82	11.16	12.00	12.32	13.92	10.38	10.71	11.55	11.87	13.47
8H	4H	10.28	10.65	11.44	11.80	13.39	9.91	10.27	11.06	11.42	13.02
	6H	10.91	11.22	12.09	12.41	14.00	10.53	10.83	11.70	12.02	13.62
	8H	11.13	11.40	12.31	12.57	14.18	10.74	11.01	11.92	12.17	13.79
	12H	11.26	11.49	12.45	12.66	14.31	10.85	11.08	12.03	12.25	13.90
12H	4H	10.26	10.59	11.43	11.75	13.35	9.89	10.23	11.06	11.39	12.99
	6H	10.94	11.21	12.12	12.37	13.99	10.57	10.83	11.75	12.00	13.62
	8H	11.18	11.41	12.36	12.58	14.22	10.80	11.03	11.98	12.20	13.84