

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: P917645

Luminaire Tested: DFN2DIP-SQ4F0-070D160US930-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917645
REPORT IS A COMBINATION OF REPORTS P901725 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-070D160US930-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

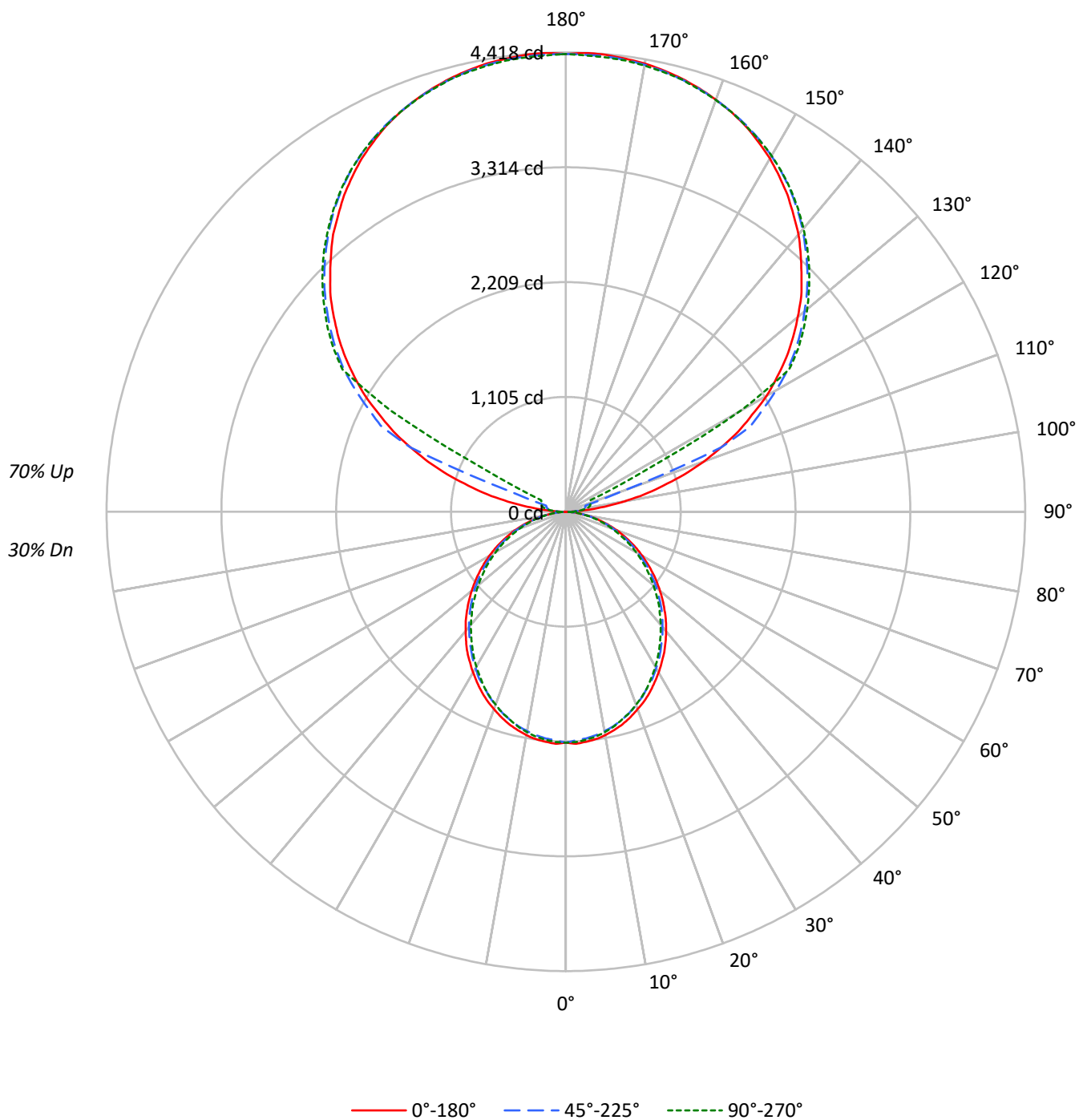
Lumens per Lamp: N/A
Luminaire Lumens: 18564.3 lumens
Efficiency: N/A
Efficacy: 101.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

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: P917645

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US930-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P917645

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US930-FLLONL

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	55	55	55	38	38	38
1	93	89	85	82	84	80	77	74	63	61	59	48	47	45	34	33	32
2	85	78	72	67	76	70	65	61	56	52	49	42	40	38	30	28	27
3	78	68	61	56	69	62	56	51	49	45	41	37	34	32	26	25	23
4	71	60	53	47	63	55	48	43	43	39	35	33	30	27	23	21	20
5	65	54	46	40	58	49	42	37	39	34	30	30	26	24	21	19	17
6	60	48	40	35	53	43	37	32	35	30	26	27	23	21	19	17	15
7	55	43	36	30	49	39	32	28	31	26	23	24	21	18	17	15	13
8	51	39	32	27	46	36	29	24	29	24	20	22	19	16	16	14	12
9	47	36	28	23	43	32	26	22	26	21	18	20	17	14	15	12	11
10	44	33	26	21	40	30	23	19	24	19	16	19	15	13	14	11	10

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1558	1558	1558
5°	1561	1537	1547
10°	1548	1516	1527
15°	1525	1492	1494
20°	1494	1457	1461
25°	1464	1416	1423
30°	1425	1378	1374
35°	1389	1333	1323
40°	1344	1287	1273
45°	1300	1241	1223
50°	1251	1193	1165
55°	1200	1138	1112
60°	1142	1072	1050
65°	1079	1004	978
70°	999	921	901
75°	888	821	830
80°	754	695	693
85°	545	475	466

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2361 cd/sqm

TEST NUMBER: P917645

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US930-FLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	209.0	1.1
10°-20°	588.1	3.2
20°-30°	864.2	4.7
30°-40°	1003.7	5.4
40°-50°	1002.5	5.4
50°-60°	874.2	4.7
60°-70°	646.2	3.5
70°-80°	365.6	2.0
80°-90°	104.2	0.6
90°-100°	145.1	0.8
100°-110°	541.2	2.9
110°-120°	1435.3	7.7
120°-130°	2380.5	12.8
130°-140°	2528.6	13.6
140°-150°	2350.1	12.7
150°-160°	1889.4	10.2
160°-170°	1217.5	6.6
170°-180°	419.0	2.3
0°-30°	1661.3	8.9
0°-40°	2665.1	14.4
0°-60°	4541.7	24.5
0°-90°	5657.8	30.5
90°-120°	2121.6	11.4
90°-150°	9380.7	50.5
90°-180°	12907.0	69.5
0°-180°	18564.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2221	2221	2221	2221	2221	
5°	2221	2212	2189	2206	2202	211
15°	2114	2101	2073	2082	2071	595
25°	1913	1896	1860	1864	1860	880
35°	1651	1629	1595	1582	1572	1031
45°	1343	1328	1296	1273	1264	1037
55°	1016	1004	978	952	942	909
65°	686	673	651	632	621	678
75°	359	355	344	331	335	383
85°	88	85	83	77	75	98
90°	3	38	64	80	86	17
95°	207	102	124	140	137	245
105°	968	1064	194	229	242	1035
115°	1832	1886	1966	491	261	1803
125°	2590	2631	2692	2714	2724	2310
135°	3205	3256	3284	3316	3310	2476
145°	3718	3714	3768	3791	3775	2325
155°	4093	4065	4103	4122	4097	1886
165°	4313	4294	4304	4326	4304	1219
175°	4412	4390	4396	4418	4386	420
180°	4402	4402	4402	4402	4402	

TEST NUMBER: P917645

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US930-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2220.6	2220.6	2220.6	2220.6	2220.6
2.5°	2233.6	2222.9	2199.3	2220.6	2216.6
5°	2220.6	2212.3	2188.7	2205.7	2201.6
7.5°	2205.7	2193.0	2169.4	2186.7	2182.4
10°	2182.4	2167.4	2141.8	2158.8	2152.5
12.5°	2150.2	2137.5	2111.9	2122.5	2118.2
15°	2114.0	2101.3	2073.4	2082.0	2071.3
17.5°	2069.1	2056.4	2028.5	2039.2	2028.5
20°	2019.9	2007.3	1977.3	1983.7	1975.3
22.5°	1971.0	1951.7	1923.9	1923.9	1919.5
25°	1913.3	1896.2	1860.0	1864.1	1860.0
27.5°	1849.1	1834.2	1806.5	1800.2	1789.5
30°	1785.3	1768.0	1736.1	1729.7	1721.1
32.5°	1716.8	1704.1	1669.9	1657.0	1648.4
35°	1650.7	1629.4	1595.1	1582.2	1571.6
37.5°	1575.9	1556.6	1522.4	1507.5	1496.8
40°	1499.1	1481.9	1447.6	1428.6	1420.0
42.5°	1424.3	1407.1	1373.1	1351.6	1338.9
45°	1343.2	1328.3	1296.1	1272.8	1264.1
47.5°	1264.1	1249.2	1215.0	1191.4	1178.8
50°	1180.8	1170.1	1140.2	1110.4	1099.7
52.5°	1099.7	1084.8	1057.1	1033.6	1018.6
55°	1016.5	1003.6	978.0	952.4	941.8
57.5°	933.2	922.5	894.6	869.0	860.5
60°	849.8	841.4	811.5	788.0	781.6
62.5°	768.7	753.7	732.5	711.2	702.5
65°	685.6	672.6	651.3	632.1	621.4
67.5°	600.1	589.3	570.2	555.3	546.7
70°	521.1	512.5	493.2	478.3	469.9
72.5°	439.9	431.4	420.7	405.8	399.4
75°	358.6	354.6	343.6	331.0	335.3
77.5°	286.2	277.5	273.2	266.8	260.6
80°	213.6	211.4	207.1	200.7	196.4
82.5°	145.2	145.2	143.2	134.6	134.6
85°	87.5	85.4	83.4	76.8	74.8
87.5°	38.5	34.2	29.9	23.6	21.3
90°	3.0	38.2	63.5	79.8	85.9
92.5°	79.8	66.9	76.4	82.8	85.9
95°	206.9	101.7	124.1	140.3	137.0
97.5°	372.6	111.6	162.2	172.1	175.1
100°	564.0	127.5	181.6	206.9	213.4
102.5°	774.0	767.9	188.0	222.8	232.6
105°	968.4	1064.1	194.4	229.3	242.1
107.5°	1194.6	1274.1	200.9	235.7	248.5
110°	1411.4	1478.0	557.6	239.0	251.5

TEST NUMBER: P917645

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US930-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1615.3	1672.4	1618.3	245.2	254.9
115°	1831.6	1885.7	1965.5	490.6	261.4
117.5°	2019.7	2083.2	2137.7	1681.9	847.3
120°	2230.0	2277.6	2335.1	2373.3	1943.3
122.5°	2408.1	2459.2	2523.1	2542.0	2545.4
125°	2589.7	2631.3	2691.9	2714.2	2723.7
127.5°	2755.4	2800.1	2848.1	2879.9	2882.9
130°	2911.7	2962.7	2997.5	3032.7	3029.6
132.5°	3070.9	3112.5	3147.3	3176.1	3173.1
135°	3204.8	3255.9	3284.3	3316.4	3309.9
137.5°	3344.8	3383.0	3415.1	3446.9	3437.5
140°	3481.7	3507.4	3542.2	3571.0	3555.1
142.5°	3596.7	3619.0	3660.3	3685.6	3669.7
145°	3717.8	3714.3	3768.5	3790.7	3774.9
147.5°	3822.5	3813.1	3867.2	3883.1	3870.5
150°	3924.7	3902.3	3953.5	3972.4	3956.5
152.5°	4010.5	3985.2	4032.9	4052.2	4029.9
155°	4093.4	4065.0	4103.2	4122.1	4096.8
157.5°	4160.4	4135.0	4163.7	4186.1	4160.4
160°	4217.9	4198.5	4217.9	4236.8	4214.4
162.5°	4268.6	4249.7	4265.5	4287.8	4259.1
165°	4313.2	4294.3	4303.7	4326.1	4303.7
167.5°	4348.4	4329.1	4338.9	4361.2	4332.5
170°	4377.1	4357.9	4364.2	4386.5	4357.9
172.5°	4396.0	4377.1	4383.5	4405.9	4377.1
175°	4411.9	4389.6	4396.0	4418.3	4386.5
177.5°	4418.3	4396.0	4399.4	4421.8	4393.0
180°	4402.4	4402.4	4402.4	4402.4	4402.4

TEST NUMBER: P917645

CATALOG NUMBER: DFN2DIP-SQ4F0-070D160US930-FLONL

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	6.68	7.39	7.78	8.49	10.02	6.23	6.94	7.34	8.05	9.57
	3H	8.33	8.97	9.45	10.08	11.62	7.84	8.47	8.96	9.59	11.13
	4H	8.91	9.52	10.04	10.63	12.18	8.42	9.02	9.55	10.14	11.68
	6H	9.31	9.86	10.44	10.98	12.54	8.81	9.36	9.94	10.48	12.04
	8H	9.41	9.94	10.55	11.07	12.62	8.91	9.44	10.05	10.57	12.12
	12H	9.46	9.96	10.60	11.08	12.66	8.95	9.45	10.09	10.57	12.15
4H	2H	7.12	7.72	8.25	8.84	10.38	6.76	7.37	7.90	8.48	10.03
	3H	8.98	9.48	10.12	10.62	12.18	8.57	9.07	9.71	10.21	11.77
	4H	9.69	10.15	10.83	11.28	12.86	9.26	9.73	10.41	10.85	12.43
	6H	10.20	10.59	11.35	11.75	13.32	9.77	10.16	10.91	11.31	12.88
	8H	10.35	10.72	11.50	11.86	13.45	9.91	10.28	11.06	11.42	13.01
	12H	10.41	10.75	11.58	11.90	13.50	9.96	10.30	11.13	11.46	13.05
8H	4H	9.87	10.24	11.02	11.39	12.97	9.50	9.87	10.64	11.01	12.60
	6H	10.50	10.81	11.67	11.99	13.58	10.12	10.42	11.29	11.61	13.19
	8H	10.72	10.99	11.90	12.15	13.76	10.33	10.60	11.51	11.76	13.37
	12H	10.85	11.09	12.03	12.25	13.88	10.44	10.67	11.62	11.84	13.47
12H	4H	9.85	10.19	11.02	11.34	12.93	9.48	9.82	10.65	10.97	12.56
	6H	10.53	10.80	11.71	11.96	13.57	10.16	10.43	11.33	11.59	13.19
	8H	10.77	11.00	11.95	12.16	13.80	10.39	10.62	11.57	11.78	13.42