

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: P903968

Luminaire Tested: DFN2DIP-SQ4F0-060D160US830-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P903968
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-SQ4F0-060D160US830-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

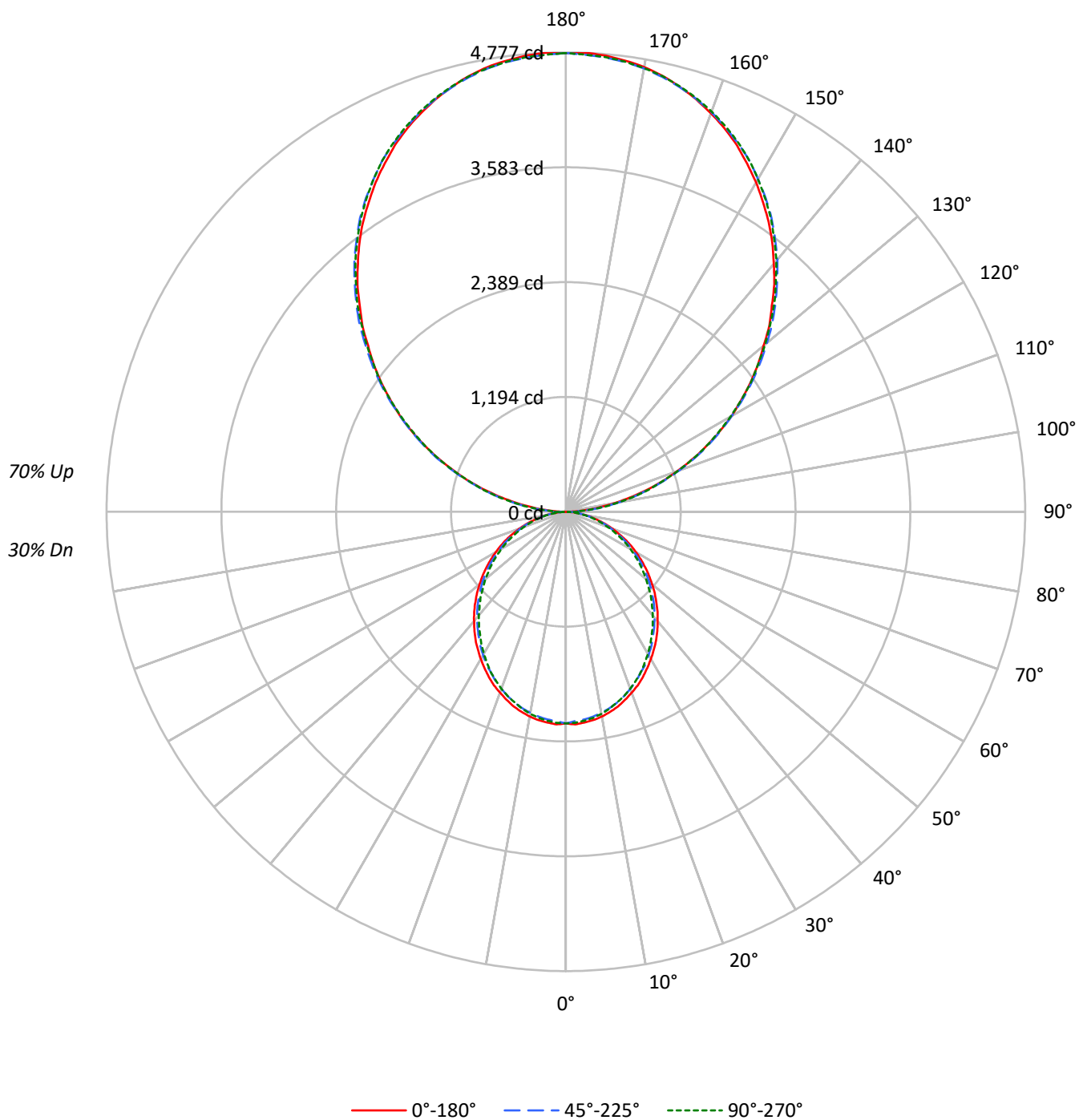
Lumens per Lamp: N/A
Luminaire Lumens: 18946.0 lumens
Efficiency: N/A
Efficacy: 110.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 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: P903968

CATALOG NUMBER: DFN2DIP-SQ4F0-060D160US830-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P903968

CATALOG NUMBER: DFN2DIP-SQ4F0-060D160US830-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	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°	1544	1544	1544
5°	1546	1523	1533
10°	1534	1503	1513
15°	1511	1478	1481
20°	1481	1444	1448
25°	1450	1403	1410
30°	1413	1365	1362
35°	1377	1321	1311
40°	1332	1275	1262
45°	1288	1230	1212
50°	1240	1183	1154
55°	1189	1127	1101
60°	1132	1062	1041
65°	1069	995	969
70°	990	912	893
75°	879	813	822
80°	747	688	687
85°	540	471	462

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3754 cd/sqm

TEST NUMBER: P903968

CATALOG NUMBER: DFN2DIP-SQ4F0-060D160US830-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	207.1	1.1
10°-20°	582.7	3.1
20°-30°	856.4	4.5
30°-40°	994.6	5.2
40°-50°	993.4	5.2
50°-60°	866.2	4.6
60°-70°	640.3	3.4
70°-80°	362.3	1.9
80°-90°	109.2	0.6
90°-100°	295.1	1.6
100°-110°	937.8	4.9
110°-120°	1604.9	8.5
120°-130°	2110.7	11.1
130°-140°	2369.1	12.5
140°-150°	2323.2	12.3
150°-160°	1948.8	10.3
160°-170°	1292.4	6.8
170°-180°	451.7	2.4
0°-30°	1646.2	8.7
0°-40°	2640.9	13.9
0°-60°	4500.5	23.8
0°-90°	5612.3	29.6
90°-120°	2837.8	15.0
90°-150°	9640.8	50.9
90°-180°	13334.0	70.4
0°-180°	18946.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2200	2200	2200	2200	2200	
5°	2200	2192	2169	2186	2182	209
15°	2095	2082	2055	2063	2053	590
25°	1896	1879	1843	1847	1843	872
35°	1636	1615	1581	1568	1557	1021
45°	1331	1316	1284	1261	1253	1027
55°	1007	994	969	944	933	901
65°	679	667	646	626	616	672
75°	355	351	340	328	332	379
85°	87	85	83	76	74	97
90°	4	52	141	132	137	19
95°	210	250	257	257	250	234
105°	866	877	886	893	893	914
115°	1610	1634	1626	1622	1610	1593
125°	2342	2378	2367	2354	2350	2093
135°	3030	3074	3083	3079	3067	2342
145°	3678	3707	3730	3734	3719	2298
155°	4206	4218	4230	4251	4238	1936
165°	4576	4571	4571	4600	4580	1291
175°	4761	4750	4741	4770	4745	452
180°	4770	4770	4770	4770	4770	

TEST NUMBER: P903968

CATALOG NUMBER: DFN2DIP-SQ4F0-060D160US830-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2200.5	2200.5	2200.5	2200.5	2200.5
2.5°	2213.3	2202.7	2179.3	2200.5	2196.4
5°	2200.5	2192.2	2168.8	2185.7	2181.6
7.5°	2185.7	2173.1	2149.8	2166.8	2162.6
10°	2162.6	2147.8	2122.3	2139.2	2132.9
12.5°	2130.7	2118.1	2092.7	2103.3	2099.0
15°	2094.7	2082.2	2054.6	2063.1	2052.6
17.5°	2050.3	2037.8	2010.2	2020.6	2010.2
20°	2001.6	1989.0	1959.4	1965.7	1957.4
22.5°	1953.1	1934.0	1906.4	1906.4	1902.1
25°	1895.8	1879.1	1843.0	1847.1	1843.0
27.5°	1832.3	1817.5	1790.1	1783.9	1773.3
30°	1769.1	1751.9	1720.3	1714.0	1705.4
32.5°	1701.2	1688.7	1654.7	1641.9	1633.4
35°	1635.7	1614.6	1580.6	1567.8	1557.3
37.5°	1561.6	1542.5	1508.6	1493.7	1483.2
40°	1485.4	1468.4	1434.5	1415.7	1407.1
42.5°	1411.4	1394.3	1360.7	1339.4	1326.7
45°	1331.1	1316.2	1284.3	1261.2	1252.6
47.5°	1252.6	1237.8	1204.0	1180.6	1168.0
50°	1170.1	1159.5	1129.9	1100.2	1089.7
52.5°	1089.7	1074.9	1047.4	1024.2	1009.4
55°	1007.3	994.5	969.1	943.8	933.2
57.5°	924.7	914.2	886.6	861.2	852.6
60°	842.1	833.8	804.2	780.8	774.5
62.5°	761.7	746.9	725.8	704.6	696.2
65°	679.3	666.6	645.5	626.3	615.8
67.5°	594.6	583.9	565.1	550.3	541.7
70°	516.3	507.8	488.7	473.9	465.6
72.5°	435.9	427.4	416.9	402.1	395.8
75°	355.3	351.4	340.5	328.0	332.2
77.5°	283.5	275.0	270.7	264.5	258.2
80°	211.7	209.4	205.2	198.9	194.6
82.5°	143.9	143.9	141.9	133.4	133.4
85°	86.6	84.6	82.6	76.1	74.1
87.5°	38.2	33.9	29.6	23.4	21.1
90°	4.3	51.7	140.9	132.3	136.6
92.5°	89.2	120.8	125.1	129.4	129.4
95°	209.9	250.2	257.4	257.4	250.2
97.5°	349.4	386.8	402.7	402.7	402.7
100°	510.5	543.6	555.1	555.1	550.7
102.5°	680.1	704.6	720.4	724.7	720.4
105°	865.6	877.1	885.8	893.0	893.0
107.5°	1049.7	1067.0	1067.0	1069.9	1049.7
110°	1228.0	1251.0	1251.0	1251.0	1239.5

TEST NUMBER: P903968

CATALOG NUMBER: DFN2DIP-SQ4F0-060D160US830-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1420.7	1445.2	1440.9	1429.4	1420.7
115°	1610.5	1633.5	1626.4	1622.0	1610.5
117.5°	1798.9	1830.5	1810.4	1798.9	1787.4
120°	1988.8	2020.3	1988.8	1988.8	1975.8
122.5°	2161.2	2201.6	2181.4	2169.9	2161.2
125°	2342.5	2378.4	2366.9	2354.0	2349.7
127.5°	2519.3	2563.9	2548.1	2530.8	2519.3
130°	2684.7	2736.5	2729.3	2720.6	2704.8
132.5°	2870.2	2910.5	2913.3	2893.2	2881.7
135°	3029.8	3074.4	3083.1	3078.7	3067.2
137.5°	3208.1	3244.0	3251.3	3248.4	3231.1
140°	3364.9	3400.8	3421.0	3421.0	3405.1
142.5°	3526.0	3561.9	3573.4	3577.7	3561.9
145°	3678.4	3707.1	3730.1	3734.4	3718.6
147.5°	3814.9	3850.9	3868.2	3875.4	3859.5
150°	3955.8	3980.4	3996.2	4009.1	3996.2
152.5°	4081.0	4105.4	4125.6	4141.3	4125.6
155°	4206.1	4217.6	4230.5	4250.7	4237.8
157.5°	4313.9	4322.6	4329.8	4358.5	4338.4
160°	4410.2	4418.9	4423.3	4447.7	4430.4
162.5°	4499.4	4499.4	4503.7	4531.1	4510.9
165°	4575.7	4571.3	4571.3	4600.1	4580.0
167.5°	4644.7	4631.7	4631.7	4660.5	4640.3
170°	4696.4	4684.9	4680.7	4709.4	4684.9
172.5°	4732.4	4720.9	4716.6	4745.3	4720.9
175°	4761.2	4749.7	4741.0	4769.8	4745.3
177.5°	4777.0	4765.5	4756.8	4781.3	4756.8
180°	4769.8	4769.8	4769.8	4769.8	4769.8

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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	6.52	7.23	7.64	8.34	9.87	6.08	6.78	7.19	7.89	9.43
	3H	8.18	8.81	9.30	9.93	11.48	7.69	8.32	8.81	9.43	10.99
	4H	8.76	9.36	9.89	10.48	12.03	8.27	8.87	9.40	9.98	11.54
	6H	9.16	9.71	10.30	10.83	12.40	8.66	9.21	9.80	10.33	11.90
	8H	9.26	9.78	10.40	10.92	12.48	8.76	9.28	9.90	10.42	11.98
	12H	9.30	9.80	10.45	10.93	12.51	8.79	9.29	9.94	10.42	12.00
4H	2H	6.97	7.57	8.11	8.68	10.24	6.61	7.21	7.75	8.33	9.89
	3H	8.82	9.32	9.97	10.47	12.04	8.42	8.92	9.56	10.06	11.63
	4H	9.53	9.99	10.68	11.13	12.72	9.11	9.57	10.26	10.70	12.29
	6H	10.04	10.44	11.20	11.59	13.17	9.61	10.01	10.77	11.16	12.74
	8H	10.19	10.56	11.35	11.71	13.30	9.76	10.12	10.91	11.27	12.87
	12H	10.26	10.59	11.43	11.75	13.35	9.81	10.14	10.98	11.30	12.90
8H	4H	9.72	10.09	10.87	11.23	12.83	9.34	9.71	10.50	10.86	12.45
	6H	10.35	10.65	11.52	11.84	13.43	9.96	10.27	11.14	11.46	13.05
	8H	10.57	10.83	11.75	12.00	13.62	10.18	10.44	11.36	11.61	13.22
	12H	10.70	10.93	11.88	12.09	13.74	10.29	10.52	11.47	11.68	13.33
12H	4H	9.70	10.03	10.87	11.19	12.79	9.33	9.66	10.50	10.82	12.42
	6H	10.38	10.64	11.56	11.81	13.42	10.00	10.27	11.18	11.44	13.05
	8H	10.61	10.85	11.80	12.01	13.66	10.23	10.47	11.42	11.63	13.28

END OF REPORT