

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: P904116

Luminaire Tested: DFN2DIP-SQ4F0-110D060US830-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904116
REPORT IS A COMBINATION OF REPORTS P900069 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D060US830-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

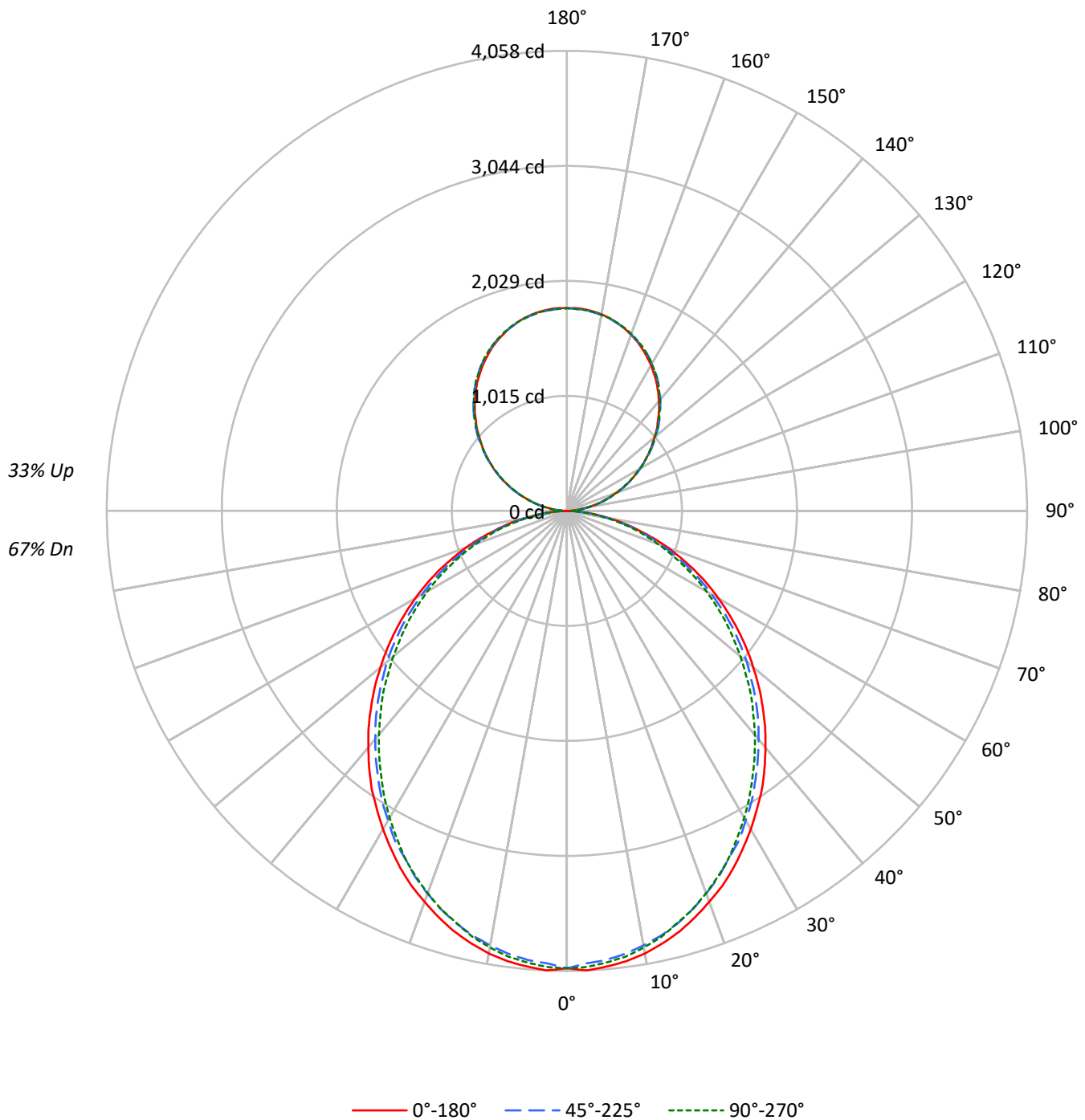
Lumens per Lamp: N/A
Luminaire Lumens: 15269.1 lumens
Efficiency: N/A
Efficacy: 101.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 150.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	111	111	111	111	105	105	105	105	93	93	93	82	82	82	72	72	72
1	102	97	93	90	96	92	88	85	82	79	76	72	70	68	64	62	61
2	93	85	79	73	87	80	75	70	72	67	63	63	60	57	56	54	51
3	85	75	67	61	79	71	64	58	63	58	53	56	52	48	50	46	44
4	77	66	58	52	73	63	55	50	56	50	46	50	45	42	44	41	38
5	71	59	51	45	67	56	49	43	50	44	39	45	40	36	40	36	33
6	66	53	45	39	62	51	43	37	45	39	35	41	36	32	36	32	29
7	61	48	40	34	57	46	38	33	41	35	31	37	32	28	33	29	26
8	56	44	36	30	53	42	34	29	38	32	27	34	29	25	31	26	23
9	53	40	32	27	50	38	31	26	35	29	24	31	26	23	28	24	21
10	49	37	29	24	46	35	28	24	32	26	22	29	24	21	26	22	19

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2831	2831	2831
5°	2835	2792	2811
10°	2812	2755	2774
15°	2771	2710	2715
20°	2715	2648	2655
25°	2659	2573	2585
30°	2590	2503	2497
35°	2524	2421	2403
40°	2442	2338	2313
45°	2361	2255	2222
50°	2272	2168	2116
55°	2180	2067	2019
60°	2075	1947	1908
65°	1960	1823	1777
70°	1815	1672	1636
75°	1613	1492	1508
80°	1370	1262	1259
85°	990	863	846

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2361 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	379.7	2.5
10°-20°	1068.3	7.0
20°-30°	1570.0	10.3
30°-40°	1823.5	11.9
40°-50°	1821.2	11.9
50°-60°	1588.0	10.4
60°-70°	1173.9	7.7
70°-80°	664.2	4.3
80°-90°	180.4	1.2
90°-100°	110.7	0.7
100°-110°	351.6	2.3
110°-120°	601.8	3.9
120°-130°	791.4	5.2
130°-140°	888.4	5.8
140°-150°	871.1	5.7
150°-160°	730.8	4.8
160°-170°	484.6	3.2
170°-180°	169.4	1.1
0°-30°	3018.1	19.8
0°-40°	4841.6	31.7
0°-60°	8250.9	54.0
0°-90°	10269.3	67.3
90°-120°	1064.1	7.0
90°-150°	3615.0	23.7
90°-180°	5000.0	32.7
0°-180°	15269.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4034	4034	4034	4034	4034	
5°	4034	4019	3976	4007	4000	383
15°	3840	3817	3767	3782	3763	1082
25°	3476	3445	3379	3386	3379	1599
35°	2999	2960	2898	2874	2855	1873
45°	2440	2413	2355	2312	2297	1883
55°	1847	1823	1777	1730	1711	1651
65°	1245	1222	1183	1148	1129	1231
75°	652	644	624	601	609	696
85°	159	155	152	140	136	177
90°	2	19	53	50	51	15
95°	79	94	96	96	94	88
105°	325	329	332	335	335	343
115°	604	613	610	608	604	597
125°	878	892	888	883	881	785
135°	1136	1153	1156	1154	1150	878
145°	1379	1390	1399	1400	1394	862
155°	1577	1582	1586	1594	1589	726
165°	1716	1714	1714	1725	1717	484
175°	1785	1781	1778	1789	1779	170
180°	1789	1789	1789	1789	1789	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4034.3	4034.3	4034.3	4034.3	4034.3
2.5°	4057.6	4038.3	3995.5	4034.3	4026.8
5°	4034.3	4019.0	3976.2	4007.0	3999.7
7.5°	4007.0	3984.0	3941.2	3972.5	3964.7
10°	3964.7	3937.5	3891.0	3921.8	3910.3
12.5°	3906.3	3883.2	3836.7	3856.0	3848.2
15°	3840.4	3817.3	3766.7	3782.3	3763.0
17.5°	3758.9	3735.9	3685.2	3704.6	3685.2
20°	3669.6	3646.5	3592.2	3603.7	3588.5
22.5°	3580.7	3545.7	3495.0	3495.0	3487.2
25°	3475.7	3444.9	3379.0	3386.5	3379.0
27.5°	3359.2	3332.1	3281.8	3270.3	3251.0
30°	3243.2	3211.9	3153.8	3142.3	3126.7
32.5°	3118.9	3095.9	3033.7	3010.2	2994.6
35°	2998.7	2960.1	2897.8	2874.4	2855.1
37.5°	2862.9	2827.9	2765.8	2738.6	2719.2
40°	2723.4	2692.1	2630.0	2595.4	2579.7
42.5°	2587.6	2556.3	2494.5	2455.4	2432.4
45°	2440.2	2413.0	2354.6	2312.2	2296.6
47.5°	2296.6	2269.5	2207.2	2164.5	2141.4
50°	2145.1	2125.8	2071.4	2017.1	1997.8
52.5°	1997.8	1970.6	1920.4	1877.5	1850.4
55°	1846.7	1823.3	1776.8	1730.2	1710.9
57.5°	1695.3	1675.9	1625.3	1578.8	1563.1
60°	1543.8	1528.6	1474.2	1431.4	1419.9
62.5°	1396.5	1369.3	1330.6	1291.9	1276.3
65°	1245.4	1221.9	1183.3	1148.3	1129.0
67.5°	1090.2	1070.5	1035.9	1008.8	993.2
70°	946.6	930.9	896.0	868.8	853.6
72.5°	799.3	783.6	764.3	737.2	725.6
75°	651.5	644.1	624.3	601.3	609.2
77.5°	519.8	504.2	496.3	484.8	473.3
80°	388.1	384.0	376.2	364.7	356.8
82.5°	263.8	263.8	260.1	244.5	244.5
85°	158.9	155.1	151.5	139.5	135.8
87.5°	69.9	62.1	54.3	42.8	38.6
90°	1.6	19.4	52.9	49.6	51.2
92.5°	33.5	45.3	46.9	48.5	48.5
95°	78.7	93.8	96.5	96.5	93.8
97.5°	131.0	145.1	151.0	151.0	151.0
100°	191.4	203.8	208.1	208.1	206.5
102.5°	255.1	264.2	270.1	271.7	270.1
105°	324.6	328.9	332.2	334.9	334.9
107.5°	393.6	400.1	400.1	401.1	393.6
110°	460.5	469.1	469.1	469.1	464.8



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	532.7	541.9	540.3	535.9	532.7
115°	603.9	612.6	609.8	608.2	603.9
117.5°	674.6	686.5	678.8	674.6	670.2
120°	745.7	757.6	745.7	745.7	740.8
122.5°	810.4	825.5	817.9	813.7	810.4
125°	878.4	891.8	887.5	882.7	881.1
127.5°	944.7	961.4	955.5	949.0	944.7
130°	1006.7	1026.1	1023.4	1020.2	1014.3
132.5°	1076.3	1091.4	1092.4	1084.9	1080.5
135°	1136.1	1152.8	1156.0	1154.4	1150.1
137.5°	1203.0	1216.4	1219.2	1218.0	1211.6
140°	1261.8	1275.3	1282.8	1282.8	1276.9
142.5°	1322.1	1335.6	1339.9	1341.5	1335.6
145°	1379.3	1390.1	1398.7	1400.3	1394.4
147.5°	1430.5	1444.0	1450.5	1453.1	1447.2
150°	1483.4	1492.5	1498.5	1503.3	1498.5
152.5°	1530.2	1539.5	1547.0	1552.9	1547.0
155°	1577.2	1581.5	1586.3	1593.9	1589.0
157.5°	1617.6	1620.9	1623.5	1634.4	1626.8
160°	1653.8	1657.0	1658.6	1667.7	1661.3
162.5°	1687.2	1687.2	1688.8	1699.0	1691.5
165°	1715.7	1714.1	1714.1	1724.9	1717.4
167.5°	1741.6	1736.8	1736.8	1747.6	1740.0
170°	1761.0	1756.7	1755.1	1765.9	1756.7
172.5°	1774.5	1770.2	1768.6	1779.3	1770.2
175°	1785.3	1781.0	1777.7	1788.6	1779.3
177.5°	1791.2	1787.0	1783.7	1792.8	1783.7
180°	1788.6	1788.6	1788.6	1788.6	1788.6

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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	12.36	13.40	13.15	14.21	15.21	11.91	12.95	12.71	13.77	14.77
	3H	14.03	14.97	14.84	15.80	16.83	13.54	14.48	14.35	15.30	16.34
	4H	14.63	15.52	15.46	16.35	17.39	14.14	15.02	14.96	15.86	16.90
	6H	15.05	15.86	15.88	16.70	17.76	14.55	15.36	15.38	16.20	17.26
	8H	15.16	15.93	16.00	16.79	17.85	14.66	15.43	15.50	16.29	17.35
	12H	15.21	15.95	16.06	16.81	17.89	14.70	15.44	15.55	16.30	17.38
4H	2H	12.84	13.72	13.67	14.56	15.60	12.48	13.37	13.31	14.20	15.24
	3H	14.73	15.46	15.57	16.33	17.39	14.32	15.06	15.16	15.92	16.98
	4H	15.45	16.12	16.30	16.99	18.07	15.03	15.70	15.88	16.56	17.65
	6H	15.98	16.56	16.85	17.45	18.54	15.55	16.13	16.42	17.02	18.11
	8H	16.14	16.68	17.01	17.56	18.66	15.70	16.24	16.57	17.13	18.23
	12H	16.22	16.71	17.11	17.61	18.72	15.77	16.26	16.66	17.16	18.27
8H	4H	15.66	16.21	16.53	17.09	18.19	15.29	15.83	16.16	16.71	17.81
	6H	16.31	16.76	17.21	17.68	18.78	15.92	16.37	16.82	17.30	18.40
	8H	16.53	16.93	17.44	17.85	18.97	16.14	16.54	17.05	17.46	18.57
	12H	16.67	17.03	17.59	17.94	19.11	16.26	16.61	17.18	17.53	18.70
12H	4H	15.66	16.15	16.55	17.05	18.16	15.29	15.78	16.18	16.68	17.79
	6H	16.34	16.74	17.25	17.66	18.77	15.97	16.37	16.88	17.28	18.40
	8H	16.59	16.94	17.50	17.85	19.02	16.21	16.56	17.12	17.47	18.64