

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: P909684

Luminaire Tested: DFN2DIP-SQ4F0-160D070US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909684
REPORT IS A COMBINATION OF REPORTS P900093 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D070US840-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

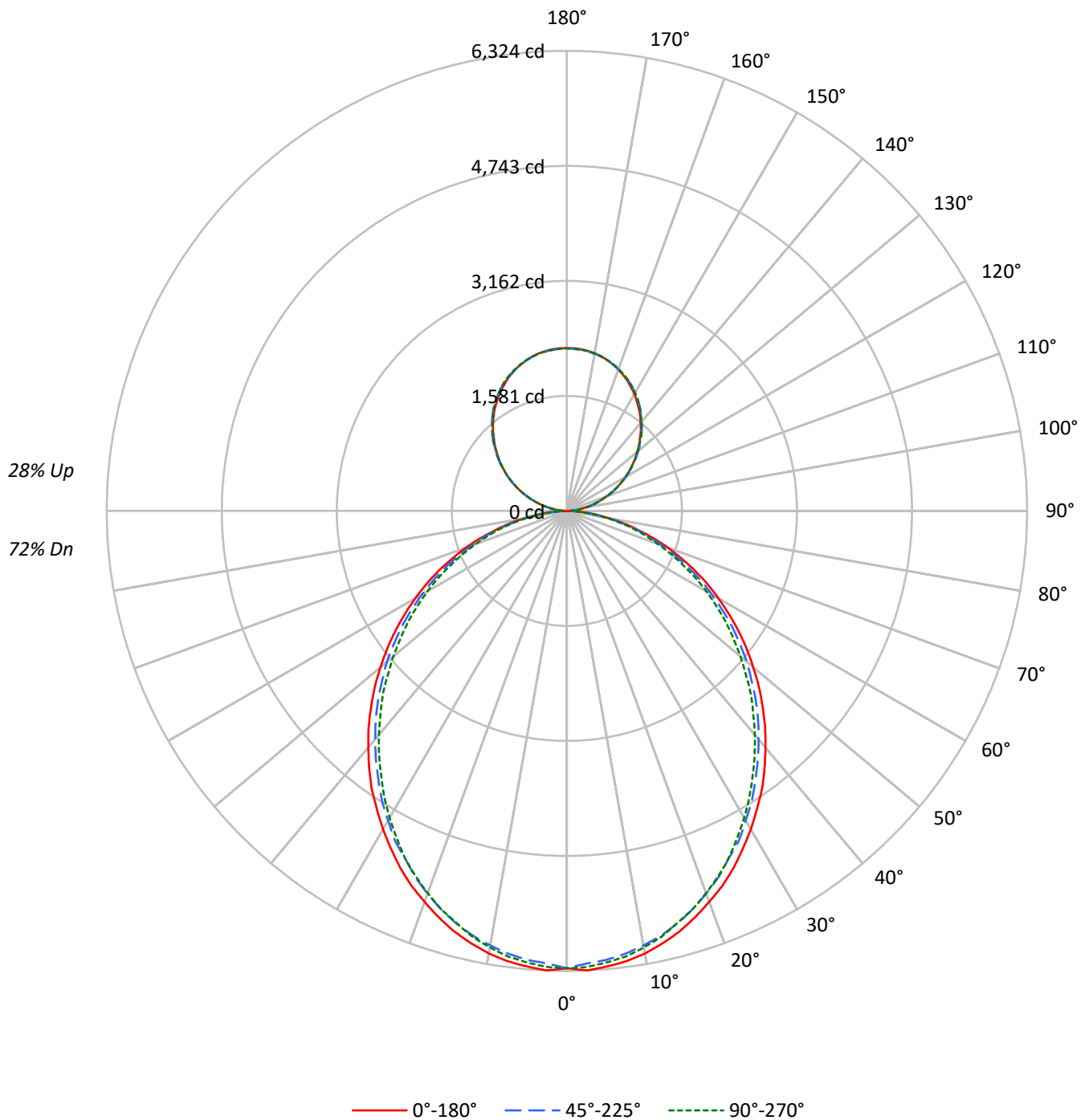
Lumens per Lamp: N/A
Luminaire Lumens: 22252.4 lumens
Efficiency: N/A
Efficacy: 101.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 218.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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	112	112	112	112	106	106	106	106	96	96	96	85	85	85	76	76	76
1	103	98	94	91	97	93	90	86	84	81	79	75	73	71	67	66	64
2	94	86	79	74	88	82	76	71	74	69	65	66	63	60	59	57	54
3	85	76	68	62	81	72	65	59	65	59	55	59	54	51	53	49	46
4	78	67	59	52	74	64	56	51	58	52	47	52	47	43	47	43	40
5	72	60	51	45	68	57	49	44	52	45	41	47	42	38	42	38	35
6	66	54	45	39	63	51	44	38	47	40	36	43	37	33	39	34	31
7	61	49	40	35	58	47	39	34	43	36	31	39	33	29	35	31	27
8	57	44	36	31	54	43	35	30	39	33	28	36	30	26	32	28	25
9	53	41	33	28	51	39	32	27	36	30	25	33	28	24	30	25	22
10	50	37	30	25	47	36	29	24	33	27	23	30	25	22	28	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4412	4412	4412
5°	4418	4351	4381
10°	4383	4293	4323
15°	4318	4223	4231
20°	4231	4126	4137
25°	4144	4009	4029
30°	4036	3901	3891
35°	3933	3773	3744
40°	3806	3644	3605
45°	3680	3514	3463
50°	3542	3379	3298
55°	3397	3221	3147
60°	3233	3034	2974
65°	3055	2842	2770
70°	2828	2606	2550
75°	2513	2325	2350
80°	2135	1966	1963
85°	1543	1345	1319

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3680 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	591.7	2.7
10°-20°	1664.9	7.5
20°-30°	2446.8	11.0
30°-40°	2841.8	12.8
40°-50°	2838.3	12.8
50°-60°	2474.9	11.1
60°-70°	1829.5	8.2
70°-80°	1035.1	4.7
80°-90°	279.5	1.3
90°-100°	138.3	0.6
100°-110°	439.6	2.0
110°-120°	752.2	3.4
120°-130°	989.3	4.4
130°-140°	1110.5	5.0
140°-150°	1088.9	4.9
150°-160°	913.5	4.1
160°-170°	605.8	2.7
170°-180°	211.7	1.0
0°-30°	4703.5	21.1
0°-40°	7545.3	33.9
0°-60°	12858.5	57.8
0°-90°	16002.6	71.9
90°-120°	1330.1	6.0
90°-150°	4518.8	20.3
90°-180°	6250.0	28.1
0°-180°	22252.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	6287	6287	6287	6287	6287	
5°	6287	6263	6197	6245	6233	597
15°	5985	5949	5870	5895	5864	1686
25°	5417	5369	5266	5278	5266	2492
35°	4673	4613	4516	4480	4450	2918
45°	3803	3760	3670	3603	3579	2935
55°	2878	2842	2769	2696	2666	2573
65°	1941	1904	1844	1790	1759	1919
75°	1015	1004	973	937	949	1084
85°	248	242	236	217	212	276
90°	2	24	66	62	64	21
95°	98	117	121	121	117	109
105°	406	411	415	419	419	428
115°	755	766	762	760	755	747
125°	1098	1115	1109	1103	1101	981
135°	1420	1441	1445	1443	1438	1098
145°	1724	1738	1748	1750	1743	1077
155°	1972	1977	1983	1992	1986	907
165°	2145	2143	2143	2156	2147	605
175°	2232	2226	2222	2236	2224	212
180°	2236	2236	2236	2236	2236	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	6287.1	6287.1	6287.1	6287.1	6287.1
2.5°	6323.7	6293.5	6226.8	6287.1	6275.5
5°	6287.1	6263.4	6196.6	6244.8	6233.2
7.5°	6244.8	6208.9	6142.1	6190.9	6178.7
10°	6178.7	6136.3	6063.9	6112.0	6094.0
12.5°	6087.7	6051.7	5979.2	6009.4	5997.2
15°	5985.0	5949.1	5870.1	5894.6	5864.4
17.5°	5858.0	5822.1	5743.2	5773.3	5743.2
20°	5718.8	5682.9	5598.2	5616.2	5592.4
22.5°	5580.3	5525.8	5446.8	5446.8	5434.7
25°	5416.7	5368.6	5265.9	5277.6	5265.9
27.5°	5235.1	5192.8	5114.6	5096.7	5066.5
30°	5054.3	5005.6	4915.1	4897.1	4872.8
32.5°	4860.6	4824.7	4727.8	4691.2	4666.9
35°	4673.4	4613.1	4516.1	4479.6	4449.5
37.5°	4461.7	4407.2	4310.3	4267.9	4237.8
40°	4244.2	4195.5	4098.6	4044.7	4020.4
42.5°	4032.6	3983.8	3887.6	3826.7	3790.7
45°	3803.0	3760.5	3669.5	3603.4	3579.1
47.5°	3579.1	3536.8	3439.9	3373.2	3337.3
50°	3343.1	3312.9	3228.2	3143.5	3113.4
52.5°	3113.4	3071.1	2992.8	2926.1	2883.8
55°	2878.0	2841.5	2769.0	2696.4	2666.3
57.5°	2642.0	2611.8	2532.9	2460.4	2436.1
60°	2405.9	2382.2	2297.5	2230.8	2212.8
62.5°	2176.3	2133.9	2073.7	2013.4	1989.0
65°	1940.9	1904.3	1844.0	1789.6	1759.4
67.5°	1699.1	1668.3	1614.5	1572.1	1547.7
70°	1475.2	1450.9	1396.3	1354.0	1330.3
72.5°	1245.6	1221.2	1191.1	1148.7	1130.8
75°	1015.3	1003.8	973.0	937.1	949.3
77.5°	810.1	785.8	773.6	755.6	737.6
80°	604.8	598.4	586.2	568.3	556.1
82.5°	411.1	411.1	405.4	381.0	381.0
85°	247.6	241.8	236.0	217.4	211.7
87.5°	109.1	96.8	84.6	66.8	60.3
90°	2.0	24.2	66.0	62.0	64.0
92.5°	41.8	56.7	58.7	60.7	60.7
95°	98.4	117.2	120.7	120.7	117.2
97.5°	163.8	181.3	188.7	188.7	188.7
100°	239.2	254.8	260.1	260.1	258.1
102.5°	318.8	330.2	337.7	339.7	337.7
105°	405.8	411.1	415.2	418.6	418.6
107.5°	492.0	500.1	500.1	501.5	492.0
110°	575.6	586.4	586.4	586.4	581.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	665.9	677.4	675.4	669.9	665.9
115°	754.9	765.7	762.3	760.3	754.9
117.5°	843.1	858.0	848.6	843.1	837.8
120°	932.1	947.0	932.1	932.1	926.0
122.5°	1013.0	1031.9	1022.5	1017.0	1013.0
125°	1097.9	1114.8	1109.4	1103.4	1101.4
127.5°	1180.8	1201.7	1194.4	1186.3	1180.8
130°	1258.4	1282.6	1279.3	1275.3	1267.8
132.5°	1345.3	1364.2	1365.5	1356.1	1350.7
135°	1420.2	1441.0	1445.1	1443.0	1437.6
137.5°	1503.7	1520.6	1523.9	1522.6	1514.5
140°	1577.2	1594.1	1603.5	1603.5	1596.1
142.5°	1652.6	1669.5	1674.9	1676.9	1669.5
145°	1724.1	1737.6	1748.4	1750.4	1743.0
147.5°	1788.2	1805.0	1813.1	1816.4	1809.1
150°	1854.2	1865.6	1873.1	1879.2	1873.1
152.5°	1912.8	1924.3	1933.7	1941.2	1933.7
155°	1971.5	1976.8	1983.0	1992.4	1986.3
157.5°	2022.1	2026.1	2029.4	2043.0	2033.5
160°	2067.2	2071.2	2073.3	2084.7	2076.6
162.5°	2109.0	2109.0	2111.0	2123.7	2114.4
165°	2144.7	2142.6	2142.6	2156.2	2146.7
167.5°	2177.1	2171.0	2171.0	2184.4	2175.0
170°	2201.3	2196.0	2193.9	2207.4	2196.0
172.5°	2218.2	2212.7	2210.7	2224.2	2212.7
175°	2231.6	2226.2	2222.2	2235.6	2224.2
177.5°	2239.1	2233.6	2229.6	2241.1	2229.6
180°	2235.6	2235.6	2235.6	2235.6	2235.6

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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	14.26	15.36	15.00	16.12	17.04	13.81	14.91	14.55	15.68	16.60
	3H	15.94	16.93	16.69	17.70	18.65	15.45	16.44	16.20	17.21	18.16
	4H	16.54	17.47	17.31	18.26	19.22	16.04	16.98	16.82	17.76	18.72
	6H	16.95	17.82	17.74	18.61	19.58	16.45	17.32	17.24	18.11	19.08
	8H	17.07	17.89	17.86	18.70	19.68	16.57	17.39	17.36	18.20	19.18
	12H	17.13	17.91	17.93	18.71	19.72	16.62	17.40	17.42	18.20	19.21
4H	2H	14.74	15.68	15.52	16.46	17.42	14.39	15.32	15.17	16.11	17.07
	3H	16.64	17.42	17.43	18.23	19.21	16.23	17.01	17.02	17.83	18.81
	4H	17.36	18.07	18.17	18.89	19.90	16.94	17.65	17.75	18.47	19.47
	6H	17.90	18.51	18.72	19.35	20.37	17.46	18.08	18.29	18.92	19.93
	8H	18.05	18.63	18.88	19.47	20.49	17.62	18.19	18.44	19.03	20.05
	12H	18.14	18.66	18.99	19.52	20.55	17.69	18.21	18.54	19.07	20.10
8H	4H	17.58	18.15	18.41	18.99	20.02	17.20	17.78	18.03	18.62	19.64
	6H	18.23	18.70	19.08	19.58	20.61	17.84	18.32	18.70	19.20	20.22
	8H	18.45	18.87	19.32	19.75	20.79	18.06	18.48	18.93	19.36	20.40
	12H	18.60	18.97	19.47	19.84	20.93	18.19	18.56	19.06	19.43	20.52
12H	4H	17.58	18.09	18.42	18.95	19.98	17.21	17.73	18.06	18.59	19.62
	6H	18.26	18.68	19.12	19.56	20.60	17.89	18.31	18.75	19.19	20.23
	8H	18.52	18.89	19.38	19.75	20.85	18.13	18.51	19.00	19.37	20.47