

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: P904228

Luminaire Tested: DFN2DIP-SQ4F0-160D070US830-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904228
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-SQ4F0-160D070US830-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

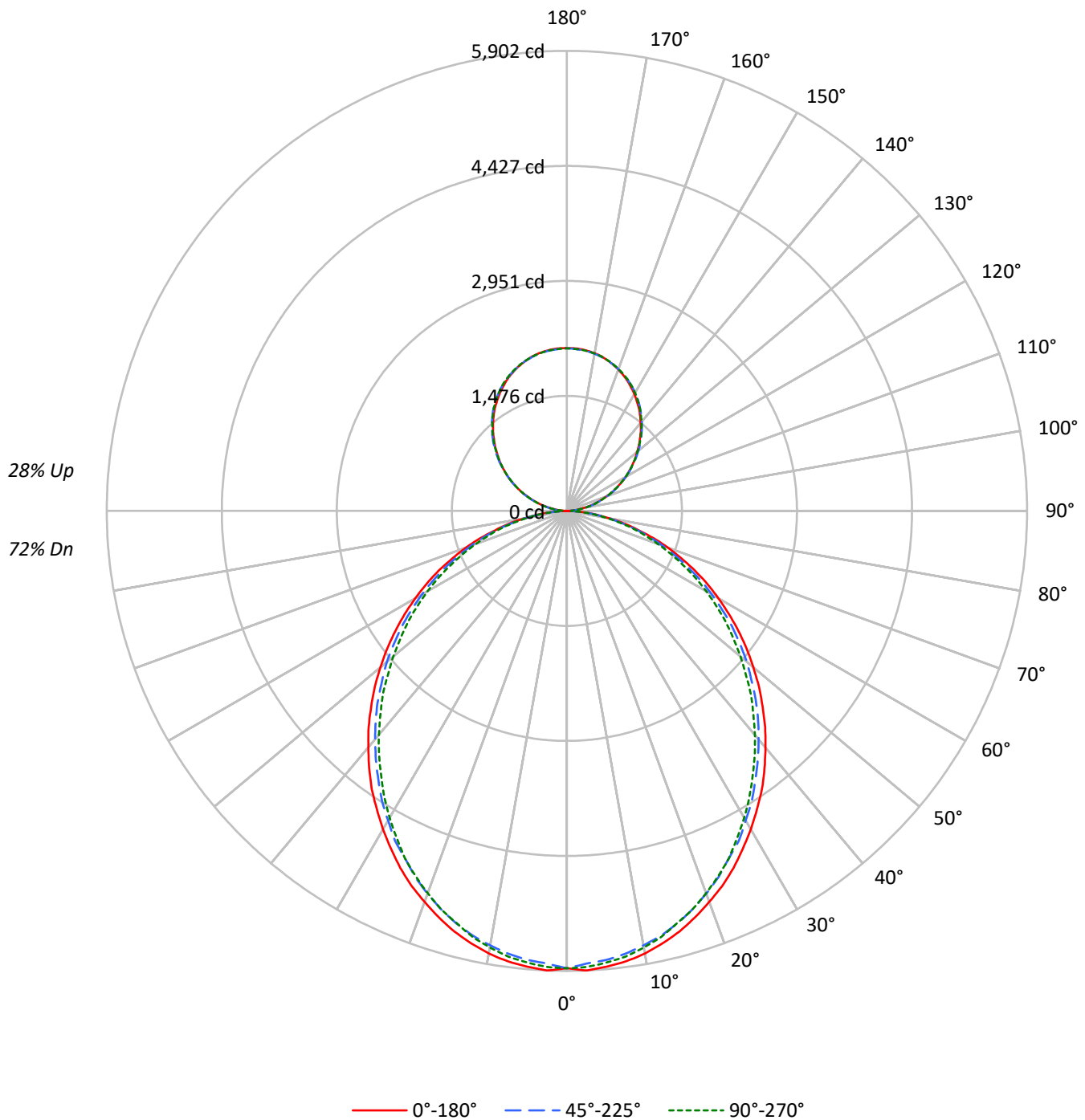
Lumens per Lamp: N/A
Luminaire Lumens: 20768.9 lumens
Efficiency: N/A
Efficacy: 94.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

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°	4117	4117	4117
5°	4124	4061	4089
10°	4090	4007	4034
15°	4030	3942	3949
20°	3949	3851	3862
25°	3868	3742	3760
30°	3767	3641	3631
35°	3671	3521	3495
40°	3552	3401	3365
45°	3434	3280	3232
50°	3305	3153	3078
55°	3171	3007	2937
60°	3018	2832	2776
65°	2852	2652	2585
70°	2640	2432	2380
75°	2346	2170	2193
80°	1993	1835	1832
85°	1440	1255	1231

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3434 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	552.3	2.7
10°-20°	1553.9	7.5
20°-30°	2283.7	11.0
30°-40°	2652.4	12.8
40°-50°	2649.1	12.8
50°-60°	2309.9	11.1
60°-70°	1707.5	8.2
70°-80°	966.1	4.7
80°-90°	260.9	1.3
90°-100°	129.1	0.6
100°-110°	410.3	2.0
110°-120°	702.1	3.4
120°-130°	923.3	4.4
130°-140°	1036.4	5.0
140°-150°	1016.3	4.9
150°-160°	852.6	4.1
160°-170°	565.4	2.7
170°-180°	197.6	1.0
0°-30°	4389.9	21.1
0°-40°	7042.3	33.9
0°-60°	12001.3	57.8
0°-90°	14935.8	71.9
90°-120°	1241.5	6.0
90°-150°	4217.6	20.3
90°-180°	5833.0	28.1
0°-180°	20768.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5868	5868	5868	5868	5868	
5°	5868	5846	5784	5828	5818	557
15°	5586	5552	5479	5502	5473	1573
25°	5056	5011	4915	4926	4915	2326
35°	4362	4306	4215	4181	4153	2724
45°	3549	3510	3425	3363	3340	2739
55°	2686	2652	2584	2517	2489	2402
65°	1812	1777	1721	1670	1642	1791
75°	948	937	908	875	886	1012
85°	231	226	220	203	198	258
90°	2	23	62	58	60	20
95°	92	109	113	113	109	102
105°	379	384	388	391	391	400
115°	705	715	712	710	705	697
125°	1025	1040	1036	1030	1028	916
135°	1326	1345	1349	1347	1342	1025
145°	1609	1622	1632	1634	1627	1005
155°	1840	1845	1851	1860	1854	847
165°	2002	2000	2000	2012	2004	565
175°	2083	2078	2074	2087	2076	198
180°	2087	2087	2087	2087	2087	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5868.0	5868.0	5868.0	5868.0	5868.0
2.5°	5902.1	5873.9	5811.7	5868.0	5857.1
5°	5868.0	5845.8	5783.5	5828.5	5817.7
7.5°	5828.5	5794.9	5732.6	5778.2	5766.8
10°	5766.8	5727.3	5659.7	5704.5	5687.8
12.5°	5681.8	5648.3	5580.6	5608.8	5597.4
15°	5586.0	5552.5	5478.8	5501.6	5473.4
17.5°	5467.5	5433.9	5360.3	5388.4	5360.3
20°	5337.5	5304.1	5225.0	5241.8	5219.6
22.5°	5208.3	5157.4	5083.7	5083.7	5072.4
25°	5055.6	5010.7	4914.9	4925.7	4914.9
27.5°	4886.1	4846.6	4773.6	4756.9	4728.7
30°	4717.3	4671.9	4587.4	4570.7	4548.0
32.5°	4536.6	4503.1	4412.6	4378.5	4355.8
35°	4361.8	4305.5	4215.0	4180.9	4152.8
37.5°	4164.2	4113.3	4023.0	3983.4	3955.3
40°	3961.2	3915.8	3825.4	3775.1	3752.4
42.5°	3763.8	3718.2	3628.4	3571.6	3538.0
45°	3549.4	3509.8	3424.9	3363.2	3340.5
47.5°	3340.5	3301.0	3210.6	3148.3	3114.8
50°	3120.2	3092.0	3013.0	2933.9	2905.9
52.5°	2905.9	2866.4	2793.3	2731.0	2691.5
55°	2686.2	2652.0	2584.4	2516.7	2488.6
57.5°	2465.9	2437.7	2364.1	2296.4	2273.7
60°	2245.5	2223.4	2144.4	2082.1	2065.3
62.5°	2031.2	1991.7	1935.4	1879.1	1856.4
65°	1811.5	1777.4	1721.1	1670.3	1642.1
67.5°	1585.8	1557.1	1506.8	1467.3	1444.5
70°	1376.9	1354.2	1303.3	1263.8	1241.6
72.5°	1162.5	1139.8	1111.7	1072.1	1055.5
75°	947.6	936.9	908.1	874.6	886.0
77.5°	756.1	733.4	722.0	705.2	688.4
80°	564.5	558.6	547.1	530.4	519.1
82.5°	383.7	383.7	378.3	355.6	355.6
85°	231.1	225.6	220.3	202.9	197.6
87.5°	101.8	90.4	79.0	62.3	56.3
90°	1.9	22.6	61.6	57.9	59.8
92.5°	39.0	52.9	54.8	56.6	56.6
95°	91.8	109.4	112.6	112.6	109.4
97.5°	152.9	169.2	176.2	176.2	176.2
100°	223.3	237.8	242.8	242.8	240.9
102.5°	297.6	308.2	315.2	317.1	315.2
105°	378.7	383.7	387.5	390.7	390.7
107.5°	459.2	466.7	466.7	468.1	459.2
110°	537.2	547.3	547.3	547.3	542.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	621.5	632.3	630.4	625.3	621.5
115°	704.6	714.6	711.5	709.6	704.6
117.5°	786.9	800.8	792.0	786.9	781.9
120°	870.0	883.8	870.0	870.0	864.3
122.5°	945.5	963.1	954.3	949.2	945.5
125°	1024.7	1040.5	1035.5	1029.8	1027.9
127.5°	1102.1	1121.6	1114.7	1107.2	1102.1
130°	1174.5	1197.1	1194.0	1190.2	1183.3
132.5°	1255.7	1273.3	1274.5	1265.7	1260.7
135°	1325.5	1344.9	1348.8	1346.8	1341.8
137.5°	1403.4	1419.2	1422.3	1421.1	1413.5
140°	1472.1	1487.8	1496.6	1496.6	1489.7
142.5°	1542.5	1558.2	1563.2	1565.1	1558.2
145°	1609.2	1621.7	1631.8	1633.7	1626.8
147.5°	1669.0	1684.7	1692.2	1695.4	1688.5
150°	1730.6	1741.3	1748.2	1753.9	1748.2
152.5°	1785.3	1796.0	1804.8	1811.8	1804.8
155°	1840.0	1845.0	1850.8	1859.5	1853.9
157.5°	1887.3	1891.0	1894.1	1906.8	1897.9
160°	1929.4	1933.2	1935.0	1945.7	1938.1
162.5°	1968.4	1968.4	1970.3	1982.2	1973.4
165°	2001.7	1999.8	1999.8	2012.4	2003.6
167.5°	2031.9	2026.3	2026.3	2038.8	2030.0
170°	2054.6	2049.6	2047.7	2060.2	2049.6
172.5°	2070.3	2065.2	2063.3	2075.9	2065.2
175°	2082.8	2077.8	2074.1	2086.6	2075.9
177.5°	2089.8	2084.7	2080.9	2091.7	2080.9
180°	2086.6	2086.6	2086.6	2086.6	2086.6

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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	14.02	15.12	14.76	15.88	16.80	13.57	14.67	14.31	15.44	16.36
	3H	15.70	16.69	16.45	17.46	18.41	15.21	16.20	15.96	16.97	17.92
	4H	16.30	17.23	17.07	18.02	18.98	15.80	16.74	16.58	17.52	18.48
	6H	16.71	17.58	17.50	18.37	19.34	16.21	17.08	17.00	17.87	18.84
	8H	16.83	17.65	17.63	18.46	19.44	16.33	17.15	17.12	17.96	18.94
	12H	16.89	17.67	17.69	18.47	19.48	16.38	17.16	17.18	17.96	18.97
4H	2H	14.51	15.44	15.28	16.22	17.18	14.15	15.08	14.93	15.87	16.83
	3H	16.40	17.18	17.19	18.00	18.97	15.99	16.77	16.78	17.59	18.57
	4H	17.12	17.83	17.93	18.65	19.66	16.70	17.41	17.51	18.23	19.23
	6H	17.66	18.27	18.48	19.11	20.13	17.23	17.84	18.05	18.68	19.69
	8H	17.81	18.39	18.64	19.23	20.25	17.38	17.95	18.20	18.79	19.81
	12H	17.90	18.42	18.75	19.28	20.31	17.45	17.97	18.30	18.83	19.86
8H	4H	17.34	17.91	18.17	18.75	19.78	16.96	17.54	17.79	18.38	19.40
	6H	17.99	18.46	18.84	19.34	20.37	17.60	18.08	18.46	18.96	19.98
	8H	18.21	18.64	19.08	19.51	20.55	17.82	18.24	18.69	19.12	20.16
	12H	18.36	18.73	19.23	19.60	20.69	17.95	18.32	18.82	19.19	20.28
12H	4H	17.34	17.85	18.18	18.71	19.74	16.97	17.49	17.82	18.35	19.38
	6H	18.02	18.44	18.88	19.32	20.36	17.65	18.07	18.51	18.95	19.99
	8H	18.28	18.65	19.14	19.51	20.61	17.90	18.27	18.76	19.13	20.23