

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: P906949

Luminaire Tested: DFN2DIP-SQ4F0-140D160US835-FLLONL

Issue Date: 11/21/2024

**Test Information**

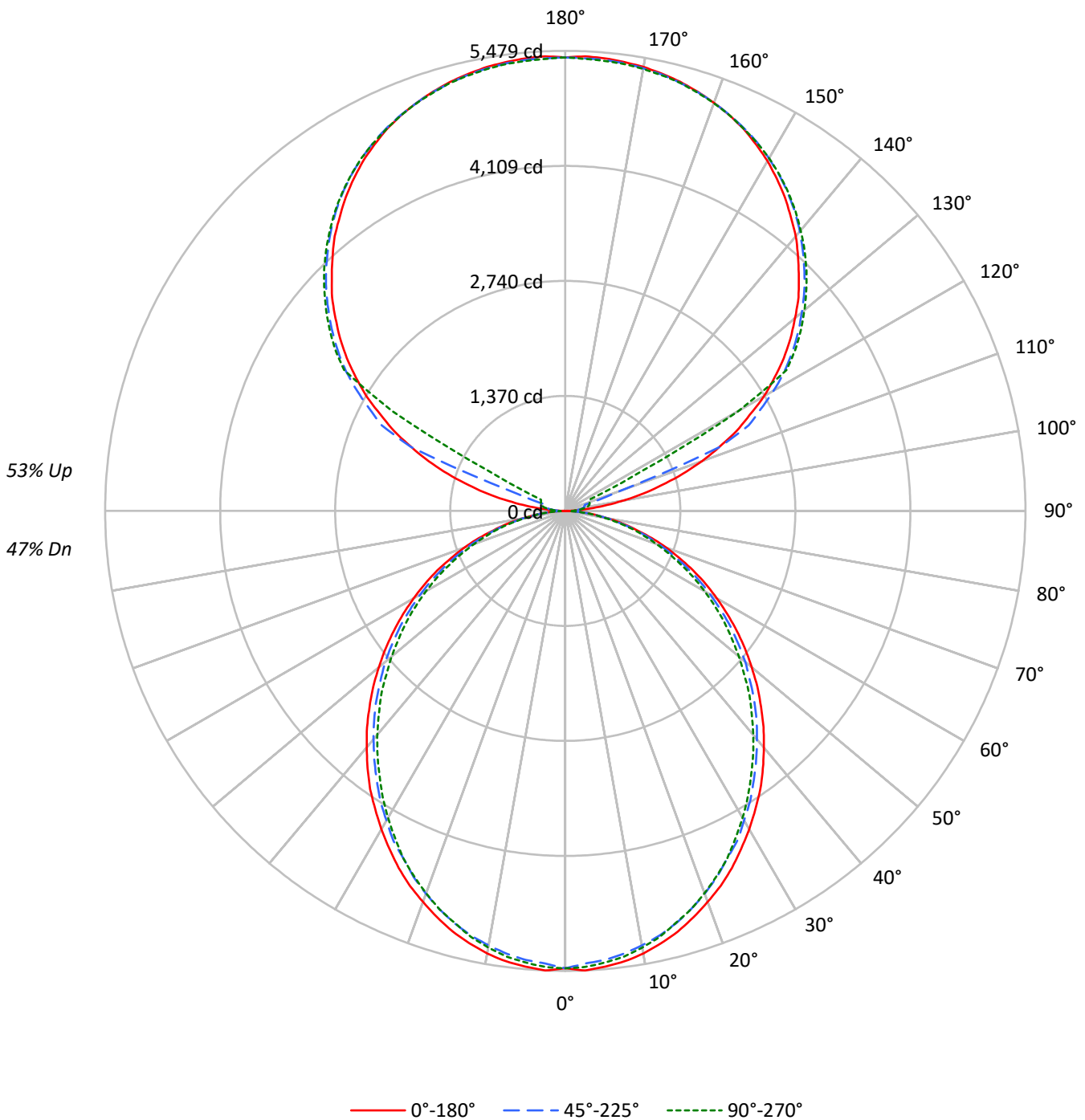
Test Method: LM-79-2019  
Report Number: P906949  
REPORT IS A COMBINATION OF REPORTS P901737 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-140D160US835-FLLONL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 29700.0 lumens  
Efficiency: N/A  
Efficacy: 111.7 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: General Diffuse  
  
Input Watts (W): 265.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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			0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	106	106	106	106	98	98	98	98	81	81	81	67	67	67	53	53	53	47	47	47	47
1	97	93	89	85	89	85	82	79	71	69	67	59	57	56	47	46	45	39	39	39	39
2	88	81	75	70	81	75	69	65	63	59	55	52	49	46	41	39	38	33	33	33	33
3	81	71	64	58	74	66	59	54	55	50	47	46	42	39	37	34	32	28	28	28	28
4	74	63	55	49	67	58	51	46	49	44	40	41	37	34	33	30	28	24	24	24	24
5	68	56	48	42	62	52	45	39	44	38	34	36	32	29	29	27	24	21	21	21	21
6	62	50	42	36	57	47	39	34	40	34	30	33	29	25	27	24	21	18	18	18	18
7	58	45	37	32	53	42	35	30	36	30	26	30	26	23	24	21	19	16	16	16	16
8	53	41	33	28	49	38	31	27	33	27	23	27	23	20	22	19	17	15	15	15	15
9	50	38	30	25	46	35	28	24	30	25	21	25	21	18	21	18	15	13	13	13	13
10	46	34	27	22	43	32	26	21	28	22	19	23	19	16	19	16	14	12	12	12	12

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	3822	3822	3822
5°	3828	3770	3796
10°	3797	3720	3745
15°	3741	3659	3666
20°	3666	3575	3585
25°	3591	3474	3491
30°	3497	3380	3371
35°	3408	3269	3244
40°	3298	3157	3124
45°	3188	3045	3001
50°	3069	2927	2858
55°	2943	2791	2727
60°	2802	2629	2577
65°	2647	2462	2400
70°	2450	2258	2210
75°	2178	2014	2036
80°	1850	1704	1701
85°	1337	1165	1143

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3188 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	512.7	1.7
10°-20°	1442.6	4.9
20°-30°	2120.0	7.1
30°-40°	2462.3	8.3
40°-50°	2459.3	8.3
50°-60°	2144.4	7.2
60°-70°	1585.2	5.3
70°-80°	896.9	3.0
80°-90°	246.2	0.8
90°-100°	178.0	0.6
100°-110°	663.8	2.2
110°-120°	1760.4	5.9
120°-130°	2919.7	9.8
130°-140°	3101.5	10.4
140°-150°	2882.5	9.7
150°-160°	2317.4	7.8
160°-170°	1493.3	5.0
170°-180°	514.0	1.7
0°-30°	4075.3	13.7
0°-40°	6537.6	22.0
0°-60°	11141.3	37.5
0°-90°	13869.5	46.7
90°-120°	2602.2	8.8
90°-150°	11505.9	38.7
90°-180°	15831.0	53.3
0°-180°	29700.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	5448	5448	5448	5448	5448	
5°	5448	5427	5369	5411	5401	517
15°	5186	5155	5086	5107	5081	1461
25°	4693	4652	4563	4573	4563	2160
35°	4049	3997	3913	3881	3855	2529
45°	3295	3258	3180	3122	3101	2543
55°	2494	2462	2399	2336	2310	2229
65°	1682	1650	1598	1550	1524	1663
75°	880	870	843	812	822	939
85°	214	210	204	188	183	239
90°	4	47	78	98	105	27
95°	254	125	152	172	168	301
105°	1188	1305	238	281	297	1269
115°	2247	2313	2411	602	321	2212
125°	3176	3227	3302	3329	3341	2833
135°	3931	3994	4028	4068	4060	3036
145°	4560	4556	4622	4650	4630	2852
155°	5021	4986	5033	5056	5025	2314
165°	5290	5267	5279	5306	5279	1495
175°	5411	5384	5392	5419	5380	515
180°	5400	5400	5400	5400	5400	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	5447.5	5447.5	5447.5	5447.5	5447.5
2.5°	5479.1	5453.0	5395.2	5447.5	5437.5
5°	5447.5	5426.9	5369.1	5410.8	5400.8
7.5°	5410.8	5379.7	5321.9	5364.1	5353.5
10°	5353.5	5316.9	5254.1	5295.8	5280.2
12.5°	5274.6	5243.5	5180.7	5206.8	5196.3
15°	5185.7	5154.6	5086.2	5107.4	5081.2
17.5°	5075.7	5044.6	4976.2	5002.3	4976.2
20°	4955.1	4924.0	4850.6	4866.2	4845.6
22.5°	4835.0	4787.8	4719.4	4719.4	4708.9
25°	4693.3	4651.6	4562.7	4572.7	4562.7
27.5°	4536.0	4499.4	4431.6	4416.0	4389.9
30°	4379.3	4337.1	4258.7	4243.2	4222.0
32.5°	4211.5	4180.4	4096.4	4064.8	4043.6
35°	4049.2	3997.0	3913.0	3881.4	3855.2
37.5°	3865.8	3818.6	3734.6	3698.0	3671.8
40°	3677.4	3635.2	3551.2	3504.6	3483.4
42.5°	3494.0	3451.8	3368.4	3315.6	3284.5
45°	3295.0	3258.4	3179.5	3122.2	3101.1
47.5°	3101.1	3064.4	2980.5	2922.7	2891.6
50°	2896.6	2870.5	2797.1	2723.7	2697.6
52.5°	2697.6	2660.9	2593.1	2535.3	2498.7
55°	2493.7	2462.0	2399.2	2336.4	2310.3
57.5°	2289.1	2263.0	2194.7	2131.9	2110.7
60°	2084.6	2064.1	1990.7	1932.9	1917.3
62.5°	1885.7	1849.0	1796.7	1744.5	1723.4
65°	1681.7	1650.0	1597.8	1550.5	1524.4
67.5°	1472.2	1445.5	1398.8	1362.1	1341.0
70°	1278.2	1257.1	1209.9	1173.2	1152.6
72.5°	1079.3	1058.1	1032.0	995.4	979.8
75°	879.8	869.8	843.1	812.0	822.5
77.5°	701.9	680.8	670.2	654.7	639.1
80°	524.1	518.5	508.0	492.4	481.8
82.5°	356.2	356.2	351.2	330.1	330.1
85°	214.5	209.5	204.5	188.4	183.4
87.5°	94.5	83.9	73.4	57.8	52.2
90°	3.7	46.9	77.9	97.9	105.3
92.5°	97.9	82.1	93.7	101.6	105.3
95°	253.8	124.8	152.2	172.1	168.0
97.5°	457.0	136.9	199.0	211.1	214.8
100°	691.8	156.4	222.7	253.8	261.7
102.5°	949.3	941.9	230.6	273.3	285.3
105°	1187.8	1305.2	238.5	281.2	296.9
107.5°	1465.2	1562.7	246.4	289.1	304.8
110°	1731.1	1812.8	683.9	293.2	308.5



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1981.2	2051.3	1984.9	300.7	312.7
115°	2246.6	2312.9	2410.8	601.8	320.6
117.5°	2477.2	2555.1	2622.0	2062.9	1039.3
120°	2735.2	2793.6	2864.1	2911.0	2383.5
122.5°	2953.7	3016.3	3094.7	3117.9	3122.1
125°	3176.4	3227.4	3301.7	3329.1	3340.7
127.5°	3379.6	3434.4	3493.3	3532.3	3536.0
130°	3571.3	3633.9	3676.6	3719.7	3716.0
132.5°	3766.6	3817.6	3860.3	3895.6	3891.9
135°	3930.8	3993.5	4028.3	4067.7	4059.8
137.5°	4102.5	4149.4	4188.8	4227.8	4216.2
140°	4270.5	4302.0	4344.7	4380.0	4360.5
142.5°	4411.5	4438.9	4489.5	4520.6	4501.1
145°	4560.0	4555.8	4622.2	4649.5	4630.1
147.5°	4688.5	4676.9	4743.3	4762.8	4747.4
150°	4813.8	4786.4	4849.1	4872.3	4852.8
152.5°	4919.1	4888.0	4946.5	4970.2	4942.8
155°	5020.7	4985.9	5032.8	5056.0	5024.9
157.5°	5102.9	5071.8	5107.0	5134.4	5102.9
160°	5173.4	5149.7	5173.4	5196.6	5169.2
162.5°	5235.6	5212.4	5231.8	5259.2	5224.0
165°	5290.3	5267.1	5278.7	5306.1	5278.7
167.5°	5333.5	5309.8	5321.9	5349.2	5314.0
170°	5368.7	5345.1	5352.9	5380.3	5345.1
172.5°	5391.9	5368.7	5376.6	5404.0	5368.7
175°	5411.4	5384.0	5391.9	5419.3	5380.3
177.5°	5419.3	5391.9	5396.1	5423.5	5388.2
180°	5399.8	5399.8	5399.8	5399.8	5399.8



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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	11.63	12.46	12.61	13.46	14.78	11.19	12.02	12.17	13.02	14.33
	3H	13.29	14.04	14.29	15.05	16.38	12.80	13.55	13.80	14.55	15.89
	4H	13.88	14.59	14.89	15.60	16.94	13.39	14.09	14.40	15.10	16.45
	6H	14.28	14.93	15.30	15.95	17.31	13.78	14.43	14.80	15.45	16.81
	8H	14.39	15.01	15.41	16.04	17.40	13.89	14.51	14.91	15.54	16.89
	12H	14.44	15.03	15.47	16.05	17.43	13.93	14.52	14.96	15.54	16.92
4H	2H	12.09	12.79	13.10	13.80	15.15	11.73	12.44	12.75	13.45	14.80
	3H	13.96	14.55	14.98	15.58	16.94	13.55	14.14	14.57	15.18	16.54
	4H	14.67	15.21	15.70	16.24	17.63	14.25	14.79	15.28	15.82	17.20
	6H	15.19	15.65	16.23	16.71	18.09	14.76	15.22	15.80	16.28	17.66
	8H	15.34	15.78	16.38	16.82	18.22	14.90	15.34	15.95	16.38	17.78
	12H	15.42	15.81	16.48	16.87	18.27	14.97	15.36	16.03	16.42	17.82
8H	4H	14.87	15.30	15.91	16.35	17.74	14.49	14.92	15.53	15.97	17.37
	6H	15.50	15.86	16.57	16.95	18.34	15.12	15.48	16.18	16.57	17.96
	8H	15.73	16.04	16.80	17.11	18.52	15.33	15.65	16.41	16.72	18.13
	12H	15.86	16.14	16.94	17.20	18.66	15.45	15.73	16.52	16.79	18.24
12H	4H	14.85	15.24	15.91	16.30	17.70	14.48	14.88	15.54	15.94	17.34
	6H	15.53	15.85	16.61	16.92	18.33	15.16	15.48	16.23	16.55	17.96
	8H	15.78	16.05	16.85	17.12	18.57	15.40	15.67	16.47	16.74	18.19