



Report Number: REP-021122-02

LM-79-08 Luminaire Photometric Report

Device Under Test

Finelite, Inc.
HP2-P-D-4'-V-835-MLB-277
HP2 Series

Report Date

2/11/2022

Goniophotometric Examination

KPL2008-6
2/10/2022

Examined By:
Brett Sorensen

Approved By:
Joe Guarino

Spectroradiometric Examination

CCT4762
02-09-2022

Examined By:
Brett Sorensen

Approved By:
Joe Guarino

Northern Lights Testing Laboratories certifies that the attached reports have been independently produced in accordance with IESNA LM-79-08, Approved Method: Electric and Photometric Measurement of Solid-State Lighting Products. The test results relate to the specific model tested under the listed environmental conditions only. This report shall not be reproduced, except in full, without written permission from Northern Lights Testing Laboratories. Photometric measurements are taken using an Integrating Sphere system and Type C goniophotometer for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. Products tested are operated in the intended orientation in application. All test equipment is calibrated regularly with standards traceable to NIST, and in accordance with ISO17025-2017 procedures. Northern Lights Testing Laboratories is an Accredited Organization, accredited by the International Accreditation Service, Inc. (IAS) to ISO/IEC 17025-2017. IAS is an ILAC -MRA Signatory Testing, Calibration, Inspection. Northern Lights Testing Laboratories is an Approved Lab Partner and is on the LED Lighting Facts Approved Labs List.



IAS Accreditation No. TL-479



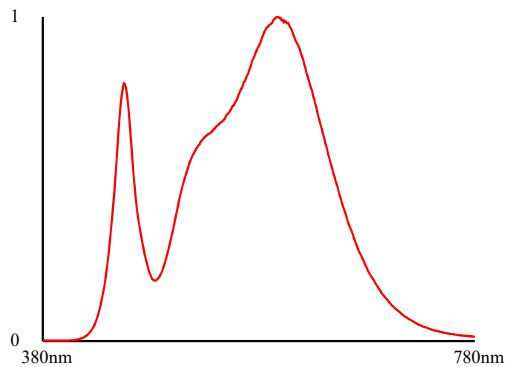


Spectral Results

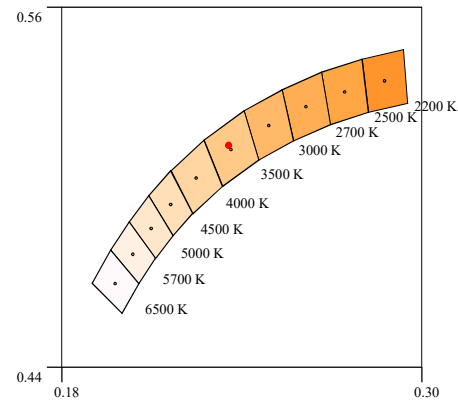
CCT: 3472 K
xy Coordinates: 0.4087 , 0.3962
u'v' Coordinates: 0.2356, 0.514
Delta u'v': +0.00165

Luminous Flux: 2449.8 lm
Radiant Flux: 5.402814 W
Electrical Power: 36.043 W
Efficacy: 68.0 lm/W
Melanopic Flux: 1431 mel lm
Melanopic Ratio: 0.58

Spectral Power Distribution



CIE u'v' (1976)



Color Rendering Index

Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
82	80	89	96	80	80	85	84	60	1	74	79	59	83	98	73



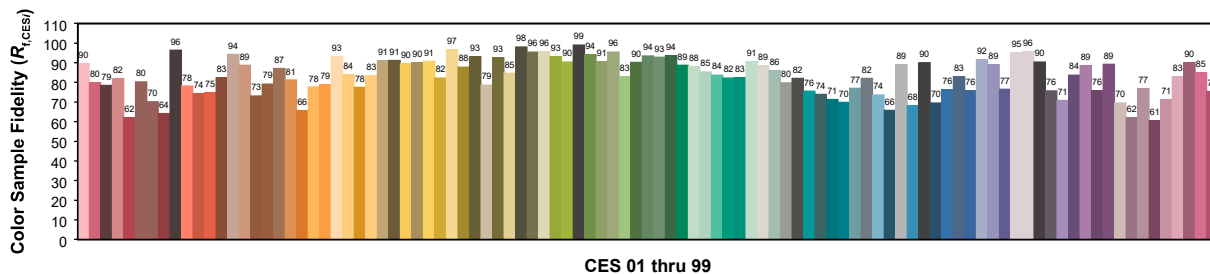
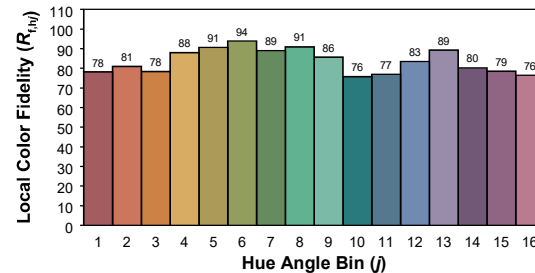
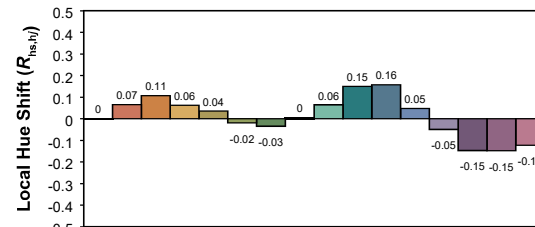
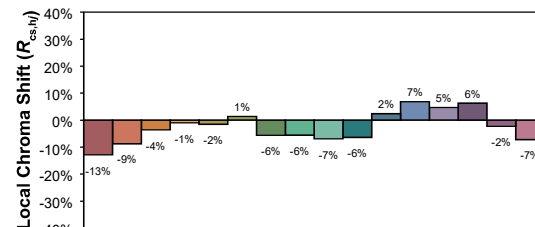
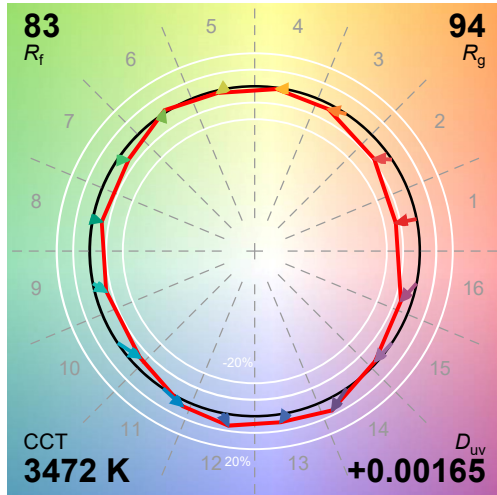
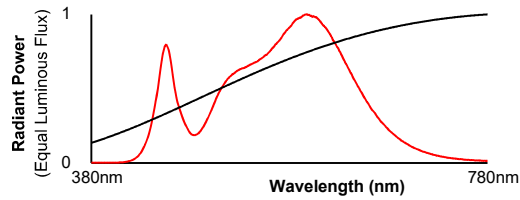
IES TM-30-18 Color Rendition Report

Source: HP2-P-D-4'-V-835-MLB-277

Date: 02-09-2022

Manufacturer: Finelite, Inc.

Model: HP2 (REF# 22278481)



CES 01 thru 99

x: 0.4087

y: 0.3962

u': 0.2356

v': 0.514

CIE 13.3 1995

CRI Ra: 82

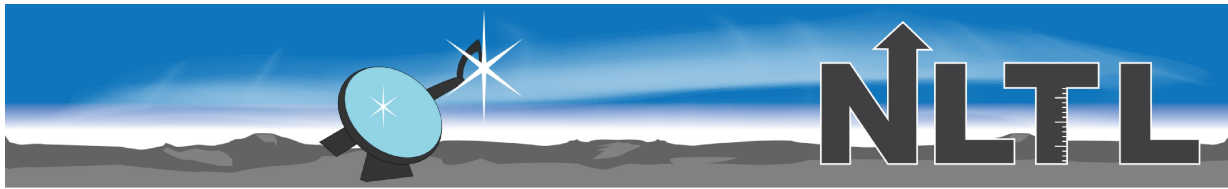
CRI R9: 1

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NORTHERN LIGHTS TESTING LABORATORIES

Performance Summary

Input

Watts	36.04 W
Number of Lamps	128
Lumens per Lamp	N/A
Total Lamp Lumens	N/A

Output

Output Lumens	2449.8 lm
Efficiency	N/A %
Efficacy	67.97 lm/W

Luminous Dimensions

Length	4 ft
Width	0.17 ft
Height	0 ft

Roadway CU

Mounting Heights	1	2	4	6	8	10
House Side CU	0.50	0.50	0.50	0.50	0.50	0.50
Street Side CU	0.50	0.50	0.50	0.50	0.50	0.50

Spacing Criterion

Two luminaires, 0°-180° plane	0.47
Two luminaires, 90°-270° plane	0.55
Four luminaires, diagonal	0.54

Full Beam Angle

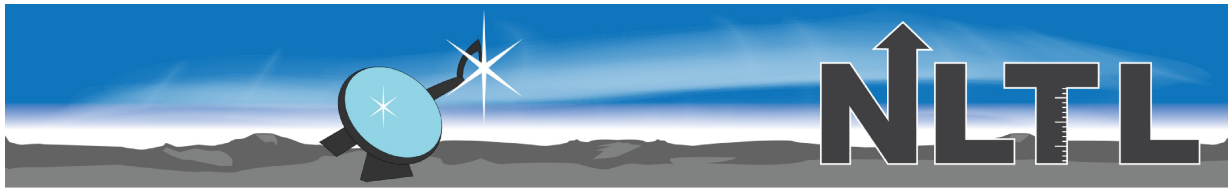
0°-180° plane	28.58°
90°-270° plane	33.14°

Roadway Summary

IESNA lateral classification	Type VS
IESNA vertical classification	Undefined (Very Short)
Cutoff classification	Full Cutoff
IESNA TM-15-11 BUG Rating	B3 U0 G0
Maximum Candela	7822.88 cd 0° horizontal 0° vertical
Street side total	50%
House side total	50%

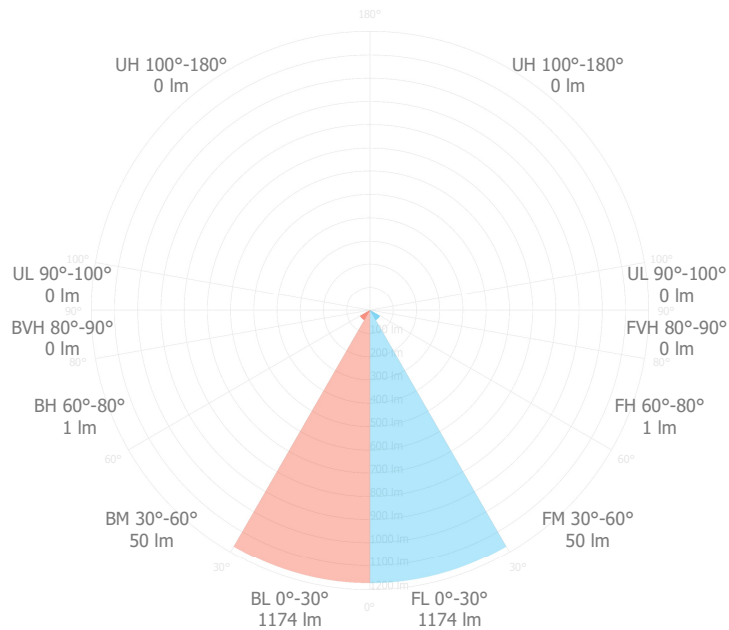
Luminaire Luminance

	0.00°	45.00°	90.00°
0.00°	123831	123831	123831
45.00°	392	233	243
55.00°	174	92	103
65.00°	85	45	51
75.00°	45	26	25
85.00°	16	7	7



NORTHERN LIGHTS TESTING LABORATORIES

IES TM-15-11 LCS Plot

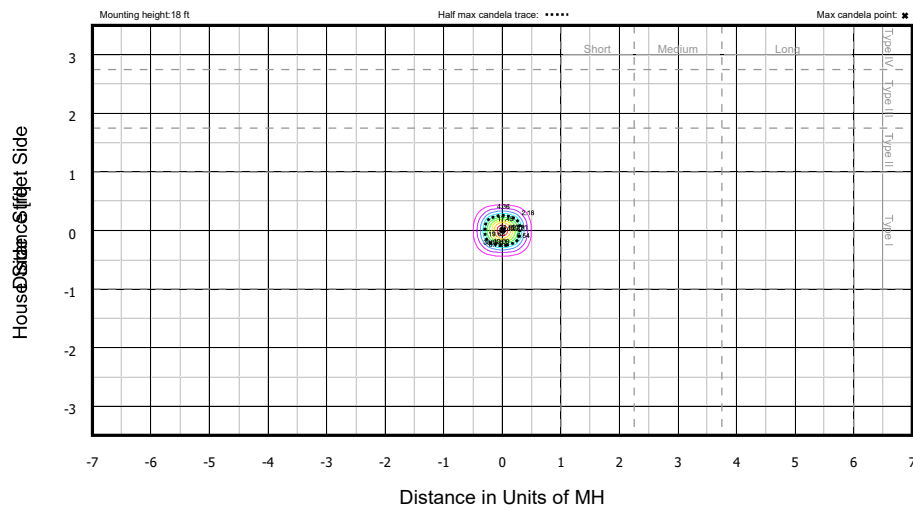


Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 20.00°	1789	73%	60.00° - 80.00°	2	0%
0.00° - 30.00°	2348	96%	70.00° - 80.00°	1	0%
0.00° - 40.00°	2433	99%	80.00° - 90.00°	0	0%
0.00° - 60.00°	2448	100%	90.00° - 110.00°	0	0%
0.00° - 80.00°	2450	100%	90.00° - 120.00°	0	0%
0.00° - 90.00°	2450	100%	90.00° - 130.00°	0	0%
10.00° - 90.00°	1794	73%	90.00° - 150.00°	0	0%
20.00° - 40.00°	644	26%	90.00° - 180.00°	0	0%
20.00° - 50.00°	655	27%	110.00° - 180.00°	0	0%
40.00° - 70.00°	16	1%	0.00° - 180.00°	2450	100%

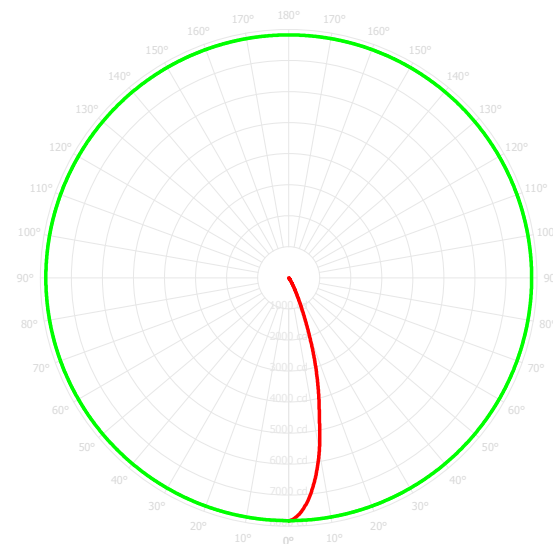


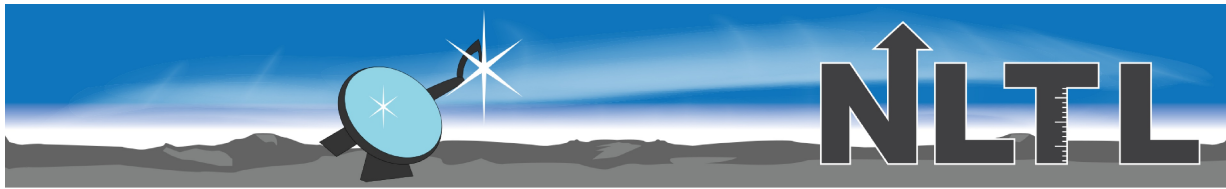
Iso-Illuminance



Peak Intensity Plane and Cone

Maximum Candela = 7822.88 cd at 0° horizontal & 0° vertical





NORTHERN LIGHTS TESTING LABORATORIES

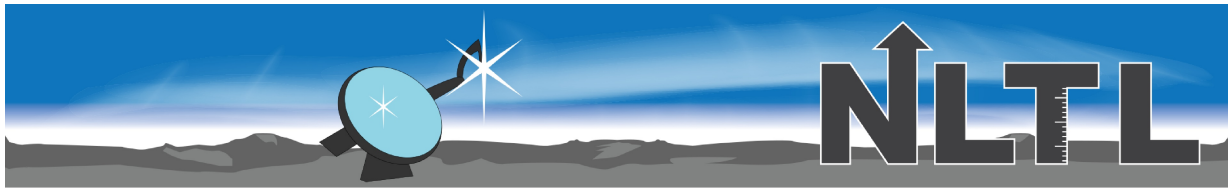
	0.00°	5.00°	10.00°	15.00°	20.00°	25.00°	30.00°	35.00°	40.00°	45.00°	50.00°	55.00°	60.00°	65.00°	70.00°	75.00°	80.00°
0.00°	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88	7822.88
2.50°	7625.42	7628.59	7681.45	7741.04	7705.61	7683.23	7632.22	7686.96	7614.41	7661.78	7665.51	7666.44	7655.25	7657.12	7648.73	7658.05	7658.05
5.00°	7187.17	7245.73	7318.83	7329.18	7302.52	7272.21	7169.46	7242.65	7247.41	7239.39	7263.54	7259.53	7234.35	7232.21	7240.97	7255.80	7255.80
7.50°	6524.59	6584.08	6648.51	6657.46	6643.47	6652.89	6649.53	6645.43	6645.90	6650.84	6660.07	6677.69	6662.96	6658.11	6661.47	6670.61	6670.61
10.00°	5672.16	5669.46	5728.11	5778.27	5768.11	5790.21	5821.35	5869.18	6019.59	5962.71	6008.02	6028.54	6028.91	6016.41	6002.71	6020.05	6016.41
12.50°	4551.38	4604.34	4662.90	4744.11	4768.17	4680.43	4882.58	4963.05	5050.88	5156.25	5209.02	5267.30	5292.10	5300.40	5314.11	5321.47	5321.47
15.00°	3657.74	3675.73	3747.72	3765.34	3808.14	3876.77	3935.51	4040.31	4179.25	4304.38	4416.83	4532.17	4593.62	4619.54	4610.87	4613.85	4587.11
17.50°	2751.23	2798.88	2845.78	2891.09	2962.33	3055.57	3125.88	3246.91	3354.79	3655.13	3610.93	3710.05	3782.78	3768.14	3708.84	3658.20	3610.93
20.00°	1860.57	1900.67	1978.34	2052.56	2031.11	2248.28	2396.53	2489.87	2610.71	2712.91	2779.58	2788.90	2818.55	2807.83	2810.34	2786.94	2760.57
22.50°	1159.20	1170.48	1232.67	1308.57	1401.44	1585.32	1756.42	1839.59	1940.39	1992.42	2013.12	2028.88	2059.65	2103.56	2122.96	2136.94	2100.57
25.00°	682.54	702.20	729.47	763.77	801.05	845.50	1042.08	1167.68	1273.42	1366.76	1456.08	1529.19	1528.72	1516.60	1460.09	1409.93	1380.57
27.50°	405.74	424.68	437.78	446.48	504.81	556.12	620.69	685.66	754.90	813.80	879.69	931.08	870.91	842.32	812.73	787.28	760.57
30.00°	229.94	233.88	245.54	267.92	287.25	327.62	362.79	388.63	422.07	483.85	538.56	546.18	511.29	472.23	449.07	435.62	416.41
32.50°	113.35	114.04	120.24	151.67	169.26	182.23	201.94	218.71	225.13	248.44	259.57	262.00	248.03	242.10	237.17	242.92	233.80
35.00°	53.52	54.46	54.97	60.69	69.11	83.55	102.96	119.26	124.17	133.64	132.79	131.98	124.58	129.82	139.72	129.50	120.57
37.50°	35.75	35.99	35.70	34.83	35.25	38.75	46.29	56.10	63.21	66.70	67.54	67.22	68.29	67.71	62.99	54.75	48.57
40.00°	28.51	28.51	28.19	27.39	26.21	25.31	25.33	26.26	29.76	32.55	32.95	33.39	31.90	28.85	24.19	19.61	18.57
42.50°	22.38	22.12	22.15	21.70	20.77	19.71	18.39	16.83	16.18	15.75	15.63	15.13	14.10	12.76	12.85	13.11	13.11
45.00°	17.53	17.48	17.28	16.72	16.06	15.19	14.03	12.83	11.59	10.42	9.72	9.38	9.41	9.66	9.96	10.17	10.17
47.50°	13.84	13.72	13.34	12.87	12.22	11.45	10.55	9.54	8.63	7.72	7.16	6.96	7.07	7.28	7.56	7.76	7.76
50.00°	10.41	10.57	10.27	9.93	9.34	8.69	7.95	7.19	6.45	5.78	5.32	5.18	5.27	5.47	5.72	5.93	6.13
52.50°	8.13	8.17	7.95	7.52	7.14	6.56	6.01	5.39	4.87	4.37	4.04	3.94	4.03	4.21	4.43	4.53	4.53
55.00°	6.30	6.27	6.09	5.82	5.46	5.05	4.58	4.12	3.69	3.32	3.07	3.01	3.07	3.20	3.33	3.44	3.44
57.50°	4.85	4.81	4.69	4.48	4.20	3.86	3.50	3.16	2.80	2.54	2.37	2.30	2.34	2.42	2.55	2.65	2.65
60.00°	3.73	3.71	3.59	3.46	3.26	3.00	2.69	2.41	2.17	1.98	1.85	1.81	1.82	1.90	1.98	2.06	2.06
62.50°	2.91	2.86	2.77	2.66	2.48	2.29	2.09	1.88	1.70	1.53	1.45	1.41	1.42	1.46	1.53	1.58	1.58
65.00°	2.26	2.25	2.15	2.08	1.92	1.79	1.62	1.46	1.31	1.20	1.13	1.10	1.11	1.15	1.19	1.23	1.23
67.50°	1.75	1.70	1.66	1.59	1.48	1.38	1.25	1.15	1.03	0.94	0.88	0.86	0.88	0.89	0.93	0.96	0.96
70.00°	1.34	1.31	1.27	1.21	1.14	1.05	0.95	0.89	0.79	0.74	0.68	0.65	0.66	0.69	0.72	0.74	0.74
72.50°	1.01	0.97	0.95	0.92	0.86	0.79	0.73	0.65	0.61	0.56	0.53	0.51	0.51	0.53	0.54	0.56	0.56
75.00°	0.73	0.72	0.70	0.67	0.63	0.59	0.53	0.50	0.45	0.42	0.39	0.40	0.39	0.40	0.41	0.43	0.43
77.50°	0.52	0.50	0.50	0.48	0.46	0.41	0.39	0.35	0.33	0.32	0.30	0.29	0.28	0.30	0.32	0.32	0.32
80.00°	0.34	0.34	0.34	0.34	0.32	0.29	0.27	0.24	0.23	0.22	0.21	0.20	0.19	0.21	0.21	0.21	0.21
82.50°	0.22	0.21	0.21	0.21	0.19	0.17	0.17	0.14	0.13	0.13	0.12	0.11	0.11	0.11	0.11	0.13	0.13
85.00°	0.09	0.09	0.09	0.09	0.09	0.06	0.07	0.06	0.06	0.04	0.05	0.04	0.04	0.05	0.04	0.05	0.05

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NORTHERN LIGHTS TESTING LABORATORIES

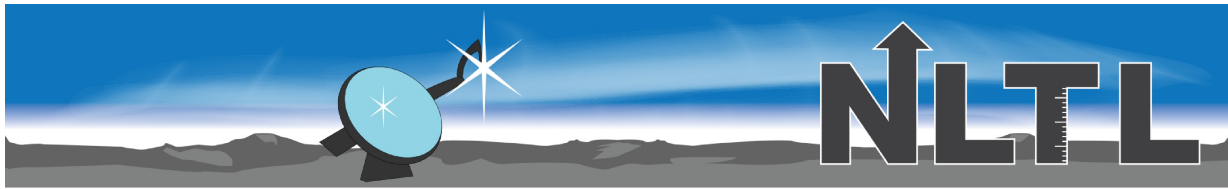
Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

	pfc	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	0.00%
	pcc	80.00%	80.00%	80.00%	70.00%	70.00%	70.00%	50.00%	50.00%	30.00%	30.00%	30.00%	10.00%	10.00%	10.00%	0.00%
	pw	70.00%	50.00%	30.00%	70.00%	50.00%	30.00%	50.00%	30.00%	50.00%	30.00%	0.00%	50.00%	30.00%	10.00%	0.00%
	0.00	2916	2916	2916	2849	2849	2849	2722	2722	2606	2606	2606	2500	2500	2500	2450
	1.00	2812	2758	2709	2754	2706	2663	2608	2574	2518	2492	2456	2436	2416	2397	2356
	2.00	2713	2621	2544	2663	2580	2511	2503	2447	2432	2388	2331	2367	2332	2300	2264
	3.00	2620	2500	2407	2575	2467	2383	2406	2336	2350	2292	2222	2298	2251	2210	2178
	4.00	2531	2392	2290	2492	2366	2272	2317	2237	2271	2204	2126	2229	2173	2126	2096
RCR	5.00	2448	2295	2188	2413	2273	2174	2233	2148	2196	2123	2040	2161	2099	2048	2019
	6.00	2368	2206	2097	2338	2188	2086	2156	2066	2125	2047	1962	2096	2028	1975	1947
	7.00	2293	2124	2015	2266	2110	2007	2082	1991	2057	1976	1890	2033	1961	1906	1880
	8.00	2222	2049	1941	2198	2037	1934	2014	1921	1992	1909	1824	1972	1897	1842	1816
	9.00	2155	1980	1872	2133	1969	1867	1949	1857	1931	1847	1762	1913	1837	1781	1757
	10.00	2091	1915	1809	2071	1906	1805	1889	1796	1873	1788	1705	1857	1780	1725	1701

Cone of Light

Mounting Height	Beam Center Light Level	0°-180° Beam Width	90°-270° Beam Width
8 ft	122 fc	4 ft	4 ft
10 ft	78 fc	6 ft	6 ft
12 ft	54 fc	7 ft	7 ft
14 ft	40 fc	8 ft	8 ft
20 ft	20 fc	11 ft	11 ft
25 ft	13 fc	14 ft	14 ft
30 ft	9 fc	17 ft	17 ft



NORTHERN LIGHTS TESTING LABORATORIES

Integrating Sphere Information:

Sphere Equipment:

SL-300 Integrating Sphere

Yokogawa WT210, Power Meter

Thermo Recorder TR-71W

Chroma 6408, AC power source

Calibration Due: 02/16/2022

Sphere Test:

Output Test: HP2-P-D-4'-V-835-MLB-277

24.9°C, 23RH%

276.93Vac, 36.043W

Base up orientation

Stable per LM-79 Standard

*Efficacy at 120Vac - 68.1 lm/W

Test Info

Model: HP2 (REF# 22278481)

Sample: HP2-P-D-4'-V-835-MLB-277

Manufacturer: Finelite, Inc.

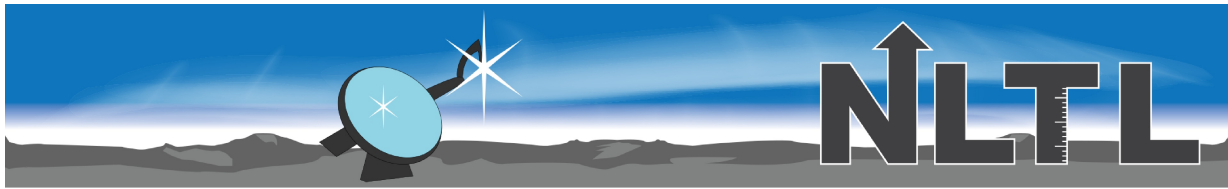
Test Date: 02-09-2022

Temperature: 24.9° C

Humidity: 23%

Spectrum Range: 380 - 780 nm

Scan Step: 1 nm



NORTHERN LIGHTS TESTING LABORATORIES

Goniometry Information:

Goniometer Equipment:

GMS2000 Type C Goniophotometer

Yokogawa WT210, Power Meter

(x3) J Type Thermocouples/Agilent 34970A data acquisition unit

GW Instek APS-7100E, AC power source

Calibration Due: 2/12/2022

Goniometer Test:

Distribution Test: HP2-P-D-4'-V-835-MLB-277

25°C, 20RH%

277Vac, 36.04W

Base up orientation

Stable per LM-79 Standard