NORTHERN LIGHTS TESTING LABORATORIES

Report Number: REP-021122-01

LM-79-08 Luminaire Photometric Report

Device Under Test
Finelite Inc.
HP2-P-D-4'-V-835-MLW-277
HP2 Series

Report Date
2/11/2022

Goniophotometric Examination
KPL2008-7
2/10/2022

Examined By:
Brett Sorensen

Approved By:
Joe Guarino

Spectroradiometric Examination
CCT4763
02-09-2022

Examined By:
Brett Sorensen

Approved By:
Joe Guarino

IAS ACCREDITED Testing Laboratory

IAS Accrediation No. TL-479

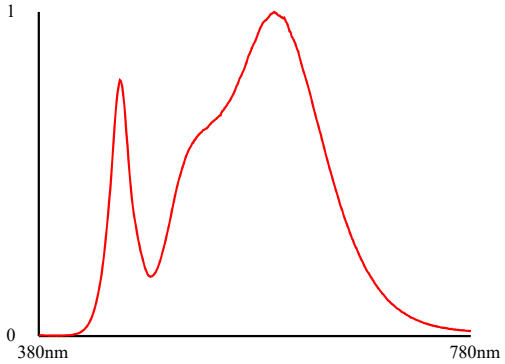
LED lighting facts Testing Laboratory Partner

NORTHERN LIGHTS TESTING LABORATORIES

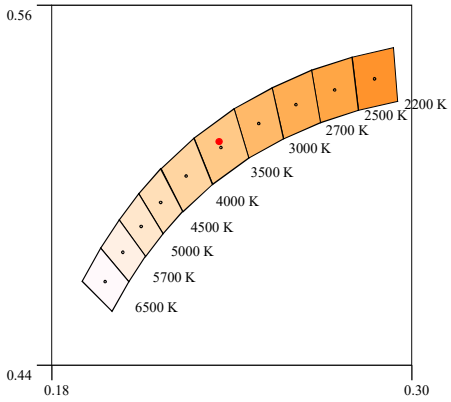
Spectral Results

CCT:	3461 K	**Luminous Flux:**	3452.6 lm
xy Coordinates:	0.4096 , 0.3972	**Radiant Flux:**	7.995095 W
u'v' Coordinates:	0.2358, 0.5146	**Electrical Power:**	36.07 W
Delta u'v':	+0.00188	**Efficacy:**	95.7 lm/W
		Melanopic Flux:	2005 mel lm
		Melanopic Ratio:	0.58

Spectral Power Distribution



CIE u'v' (1976)



Color Rendering Index

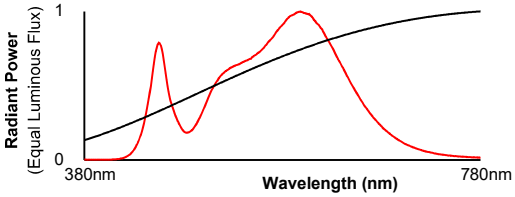
Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
82	80	89	96	80	80	85	84	60	1	74	80	59	83	98	73

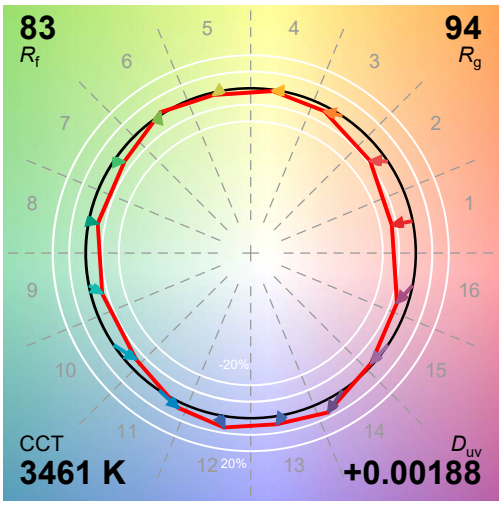
NORTHERN LIGHTS TESTING LABORATORIES

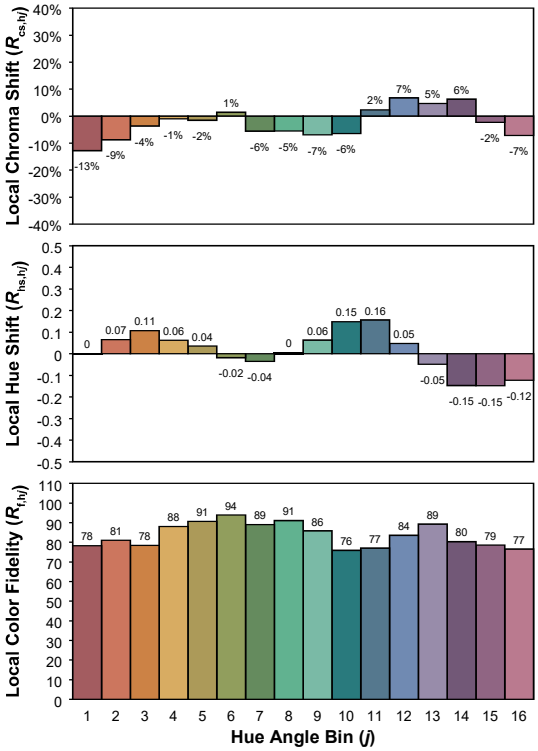
IES TM-30-18 Color Rendition Report

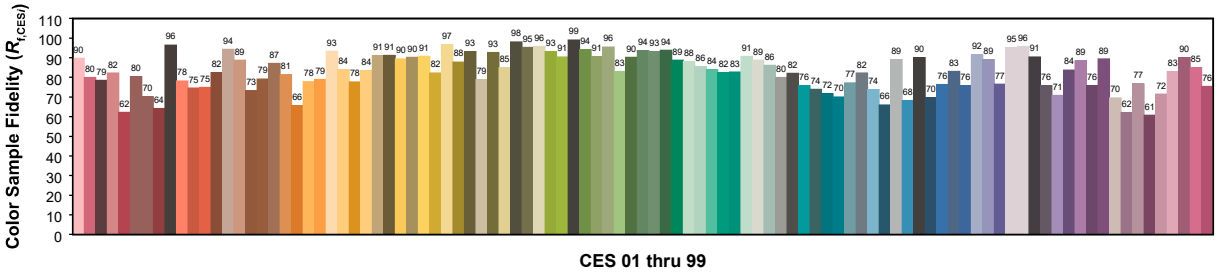
Source: HP2-P-D-4'-V-835-MLW-277 **Manufacturer:** Finelite, Inc.

Date: 02-09-2022 **Model:** HP2 (REF# 22278483)



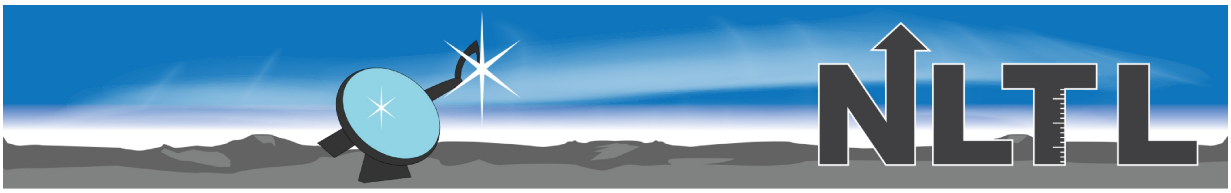






x: 0.4096
y: 0.3972
u': 0.2358
v': 0.5146

CIE 13.3 1995
CRI Ra: 82
CRI R9: 1



NORTHERN LIGHTS TESTING LABORATORIES

Performance Summary

Input

Watts	36.07 W
Number of Lamps	128
Lumens per Lamp	N/A
Total Lamp Lumens	N/A

Output

Output Lumens	3452.6 lm
Efficiency	N/A %
Efficacy	95.72 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	0.47	0.49	0.50	0.50	0.50	0.50
Street Side CU	0.47	0.49	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	0.55

Full Beam Angle

0°-180° plane	28.81°
90°-270° plane	33.54°

Roadway Summary

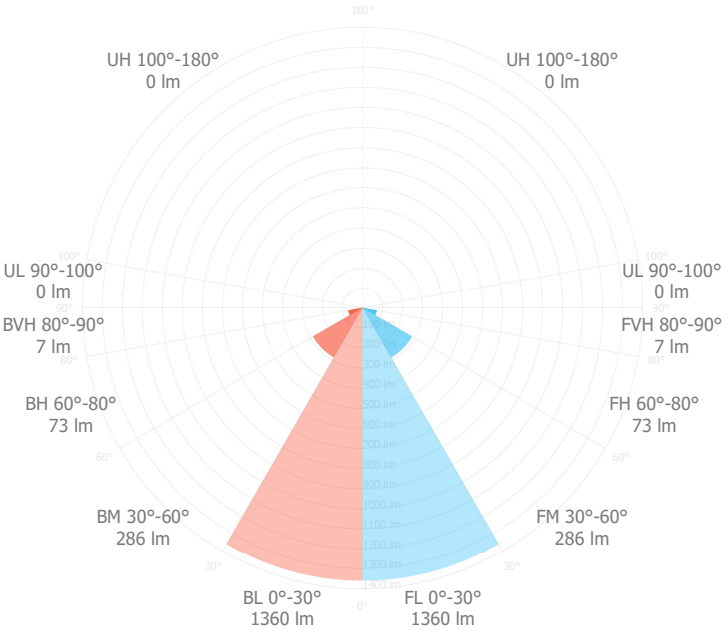
IESNA lateral classification	Type VS
IESNA vertical classification	Undefined (Very Short)
Cutoff classification	Full Cutoff
IESNA TM-15-11 BUG Rating	B3 U0 G0
Maximum Candela	8701.14 cd 0° horizontal 0° vertical
Street side total	50%
House side total	50%

Luminaire Luminance

	0.00°	**45.00°**	**90.00°**
0.00°	137733	137733	137733
45.00°	5283	5162	4998
55.00°	4402	4278	4072
65.00°	3755	3553	3324
75.00°	3182	2950	2665
85.00°	2501	2259	2027

NORTHERN LIGHTS TESTING LABORATORIES

IES TM-15-11 LCS Plot

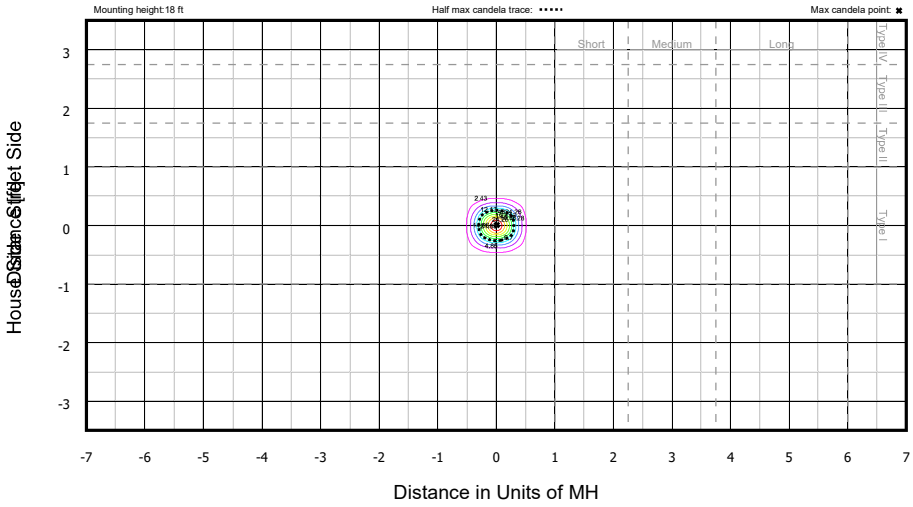


Zonal Lumen Summary

Zone	Lumens	% Fixture	Zone	Lumens	% Fixture
0.00° - 20.00°	2004	58%	60.00° - 80.00°	146	4%
0.00° - 30.00°	2720	79%	70.00° - 80.00°	51	1%
0.00° - 40.00°	2975	86%	80.00° - 90.00°	14	0%
0.00° - 60.00°	3292	95%	90.00° - 110.00°	0	0%
0.00° - 80.00°	3438	100%	90.00° - 120.00°	0	0%
0.00° - 90.00°	3453	100%	90.00° - 130.00°	0	0%
10.00° - 90.00°	2723	79%	90.00° - 150.00°	0	0%
20.00° - 40.00°	971	28%	90.00° - 180.00°	0	0%
20.00° - 50.00°	1150	33%	110.00° - 180.00°	0	0%
40.00° - 70.00°	412	12%	0.00° - 180.00°	3453	100%

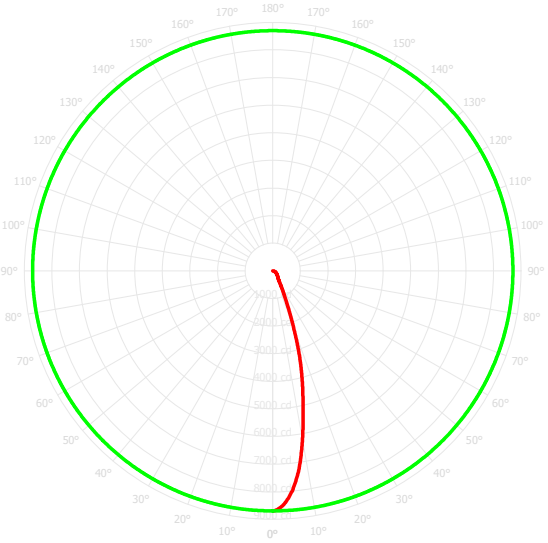
NORTHERN LIGHTS TESTING LABORATORIES

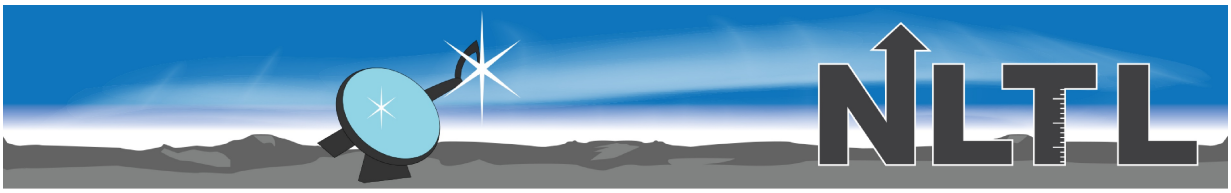
Iso-Illuminance



Peak Intensity Plane and Cone

Maximum Candela = 8701.14 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.
0.00°	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	8701.14	870
2.50°	8503.90	8541.48	8595.01	8600.65	8569.65	8540.53	8533.96	8507.66	8508.60	8516.11	8525.51	8533.96	8523.63	8533.02	8513.30	8545.23	853
5.00°	8023.01	8046.49	8108.48	8111.30	8097.21	8066.22	8035.22	8048.37	8054.95	8069.03	8083.12	8091.58	8081.24	8081.24	8070.91	8105.66	810
7.50°	7259.78	7290.87	7338.40	7346.29	7353.52	7356.62	7372.40	7362.63	7357.93	7384.89	7439.55	7433.64	7446.41	7457.49	7441.62	7476.47	747
10.00°	6204.26	6267.29	6333.78	6391.17	6397.56	6410.71	6498.06	6524.45	6560.52	6618.00	6670.69	6706.57	6733.90	6739.82	6742.45	6743.76	675
12.50°	5066.28	5120.75	5185.18	5218.90	5260.89	5291.60	5436.90	5509.50	5610.66	5747.98	5832.70	5880.32	5946.91	5954.42	5964.85	5992.93	599
15.00°	4127.97	4147.60	4207.34	4252.23	4309.81	4389.46	4421.02	4530.91	4648.12	4815.97	4942.86	5056.32	5112.02	5142.17	5131.46	5110.61	516
17.50°	3213.52	3220.57	3297.68	3369.81	3424.95	3489.66	3571.94	3674.60	3767.49	3940.12	4030.67	4143.75	4183.29	4195.31	4126.19	4068.52	404
20.00°	2242.72	2300.58	2338.24	2430.10	2515.67	2640.02	2766.73	2901.79	2987.36	3079.02	3151.44	3162.43	3186.19	3198.97	3223.29	3208.55	318
22.50°	1508.42	1539.70	1591.36	1757.98	1868.15	1898.12	1996.36	2155.37	2271.09	2319.55	2345.57	2356.19	2397.04	2443.35	2480.07	2469.93	244
25.00°	1017.95	1034.48	1068.01	1125.59	1173.77	1253.04	1358.71	1480.34	1587.79	1761.55	1849.84	1869.66	1873.98	1872.85	1851.43	1822.32	180
27.50°	730.47	736.23	741.42	752.32	765.44	856.12	924.59	972.96	1047.91	1166.16	1292.96	1323.86	1261.97	1195.56	1135.08	1106.15	107
30.00°	533.28	540.68	555.89	574.11	597.27	630.44	660.08	676.94	709.85	745.10	774.23	787.74	764.53	743.27	723.68	708.45	695
32.50°	406.56	413.99	406.64	431.62	452.85	472.82	493.63	503.38	509.44	525.59	538.11	547.28	522.80	506.67	504.62	502.95	498
35.00°	339.33	341.81	348.37	350.53	355.49	366.38	382.86	395.35	397.28	395.49	395.65	390.81	390.50	389.75	392.22	385.17	379
37.50°	309.27	310.41	311.90	312.64	311.96	312.71	315.44	322.87	326.89	327.41	324.23	321.79	321.39	318.94	315.58	307.91	303
40.00°	283.20	280.14	287.56	287.13	285.91	285.54	282.76	282.81	282.92	281.92	279.49	277.52	278.46	272.08	269.00	266.93	265
42.50°	259.63	260.09	261.42	262.55	261.63	261.57	260.42	258.27	255.02	252.60	248.37	247.25	245.63	245.10	245.23	245.04	244
45.00°	235.99	237.01	238.24	239.39	238.97	238.27	237.54	236.30	233.66	230.60	227.05	225.29	224.89	224.87	225.04	224.13	223
47.50°	206.82	215.09	216.59	217.77	217.37	216.79	215.95	214.18	212.77	209.85	207.35	205.97	205.50	206.56	204.73	203.52	202
50.00°	194.08	195.12	196.34	196.60	196.69	195.71	195.13	193.96	192.35	191.47	190.21	189.15	188.30	188.28	188.05	186.82	185
52.50°	177.14	177.49	178.62	179.10	178.92	177.47	176.47	176.15	174.92	172.51	170.11	169.24	168.06	167.76	166.67	166.47	164
55.00°	159.52	157.24	161.31	161.75	160.88	159.60	158.53	158.41	156.86	155.00	152.77	151.26	150.14	150.40	151.68	148.79	147
57.50°	143.05	143.27	144.25	145.14	143.83	142.91	142.29	141.77	139.97	138.11	136.19	134.95	133.89	133.63	133.35	132.48	131
60.00°	127.47	127.83	128.60	129.02	128.32	127.64	127.00	126.13	124.83	122.75	120.87	119.23	118.91	118.60	118.11	118.01	116
62.50°	113.72	113.96	112.47	114.42	113.52	112.86	112.61	111.16	110.04	108.28	106.77	104.97	104.49	104.17	104.45	104.77	102
65.00°	100.25	100.09	100.51	100.42	99.63	99.57	98.79	97.55	96.11	94.85	93.03	92.42	91.56	91.29	90.59	89.87	89.
67.50°	86.64	86.79	87.30	87.51	86.91	86.56	85.50	84.72	83.42	82.04	80.40	79.86	79.12	78.76	78.28	77.45	76.
70.00°	74.46	74.59	75.00	73.69	74.41	74.03	73.18	72.12	71.45	70.16	69.22	67.96	67.44	67.01	66.56	66.02	65.
72.50°	62.22	62.91	63.21	63.14	62.54	62.17	61.68	60.70	59.92	58.84	57.75	57.15	56.47	55.90	55.42	54.97	53.
75.00°	52.02	51.72	51.84	52.06	51.86	51.11	50.52	50.16	49.32	48.24	47.36	46.53	46.36	45.72	45.43	44.81	44.
77.50°	41.44	41.49	41.44	41.26	40.20	40.69	40.16	39.58	39.23	38.31	37.62	36.87	36.57	36.29	35.99	35.49	35.
80.00°	32.10	31.95	31.55	31.79	31.44	31.19	30.64	30.32	29.62	29.18	28.44	28.05	27.80	27.58	26.99	26.93	26.
82.50°	22.37	22.48	22.48	22.43	22.39	21.82	21.56	21.36	20.79	20.40	19.94	19.56	19.44	19.38	19.19	18.87	18.
85.00°	13.77	13.73	13.96	13.80	13.67	12.76	13.07	12.89	12.76	12.44	12.47	12.00	11.97	11.74	11.45	11.48	11

NORTHERN LIGHTS TESTING LABORATORIES

Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

	ρfc	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%
	ρcc	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%
	ρw	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	4110	4110	4110	4015	4015	4015	3836	3836	3673	3673	3673	3523	3523	3523	3453
	1.00	3915	3817	3730	3830	3743	3664	3603	3540	3474	3425	3357	3356	3317	3281	3220
	2.00	3727	3560	3422	3651	3500	3375	3389	3286	3286	3202	3094	3191	3123	3063	3006
	3.00	3554	3338	3171	3486	3290	3137	3200	3071	3117	3009	2879	3040	2951	2874	2821
	4.00	3395	3146	2964	3334	3107	2938	3034	2889	2966	2842	2700	2902	2798	2711	2661
RCR	**5.00**	3249	2978	2789	3195	2946	2770	2886	2732	2830	2696	2547	2777	2662	2569	2521
	6.00	3115	2830	2639	3067	2803	2623	2753	2594	2706	2566	2415	2662	2539	2443	2397
	7.00	2992	2698	2507	2948	2675	2495	2633	2472	2594	2450	2299	2556	2429	2331	2286
	8.00	2877	2579	2391	2838	2560	2382	2524	2363	2490	2345	2196	2459	2328	2230	2187
	9.00	2771	2471	2288	2736	2455	2280	2425	2265	2396	2250	2104	2368	2236	2139	2098
	10.00	2673	2373	2194	2641	2360	2188	2333	2175	2308	2163	2021	2284	2152	2056	2016

Cone of Light

Mounting Height	Beam Center Light Level	0°-180° Beam Width	90°-270° Beam Width
8 ft	136 fc	4 ft	4 ft
10 ft	87 fc	6 ft	6 ft
12 ft	60 fc	7 ft	7 ft
14 ft	44 fc	8 ft	8 ft
20 ft	22 fc	11 ft	11 ft
25 ft	14 fc	14 ft	14 ft
30 ft	10 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-MLW-277

25°C, 22RH%

277.18Vac, 36.07W

Base up orientation

Stable per LM-79 Standard

*Efficacy at 120Vac - 95.7 lm/W

Test Info

Model: HP2 (REF# 22278483)
Sample: HP2-P-D-4'-V-835-MLW-277
Manufacturer: Finelite, Inc.
Test Date: 02-09-2022

Temperature: 25° C
Humidity: 22%

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-MLW-277

25.007°C, 20RH%

277Vac, 36.07W

Base up orientation

Stable per LM-79 Standard