

PRIMUS LIGHTING INC.

TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

LN2-FL-M-3500K-4'

PRODUCT DESCRIPTION

LN "LINEA" SERIES-FL LENS- MEDIUM LUMENS-3500K-4'

PROJECT NUMBER

G104712003

REPORT NUMBER

104712003LAX-003

ISSUE DATE

July 6, 2021

REVISED DATE

None

TEST DATES

April 27, 2021 through April 27, 2021.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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PAGES

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REPORT NUMBER

104712003LAX-003

MODEL NUMBER(s)

LN2-FL-M-3500K-4'

PRODUCT DESCRIPTION

LN "LINEA" SERIES-FL LENS- MEDIUM LUMENS-3500K-4'

REPORT RENDERED TO:

PRIMUS LIGHTING INC.
3570 LEXINGTON AVE
EL MONTE, CA 91731

STATEMENT OF LIMITATION

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

AUTHORIZATION

The testing performed was authorized by signed quote number Qu-01181034-3.

TEST STANDARDS

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

ANSI NEMA ANSLG C78.377: 2017: Specifications of the Chromaticity of Solid State Lighting Products

In Charge of Report:



Nicolas Manders
Engineer
Lighting Division

Reviewer:



Vladimir Kozak
Engineering Supervisor
Lighting Division

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SAMPLE INFORMATION

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ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	LAN1804271051-001	LN2-FL-M-3500K-4'	LN "LINEA" SERIES-FL LENS-MEDIUM LUMENS-3500K-4'	prototype	4/27/18
2	LAN1804271051-002	--	2" WIDE LINEAR LED FLAT LENS	prototype	4/27/18

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	LN2-FL-M-3500K-4'	1,2

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	LN2-FL-M-3500K-4'
Product Description:	LN "LINEA" SERIES-FL LENS- MEDIUM LUMENS-3500K-4'
LED Model No.:	Osram
Driver Model No.:	Osram Oti 50/120-277/14A DIM L
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	3162.2	3255.6
Input Power (W) @ 120 (Vac)	35.88	36.28
Lumen Efficacy (lm/W)	88.1	89.7
Input Power Factor (I) @ 120 (Vac)	0.997	0.998

Criteria	Results
Input ATHD (%) @ 120 (Vac)	5.78
Correlated Color Temperature (K)	3385
Color Rendering Index - Ra (I)	81.4
Color Rendering Index - R9 (I)	10.2
Duv (I)	0.0002
Chromaticity Coordinate (x)	0.412
Chromaticity Coordinate (y)	0.395
Chromaticity Coordinate (u')	0.239
Chromaticity Coordinate (v')	0.514
Input Power (W) @ 277 (Vac)	36.75
Input Power Factor (I) @ 277 (Vac)	0.960
Input ATHD (%) @ 277 (Vac)	14.69

TEST METHODS

SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS

No seasoning was performed in accordance with IESNA LM-79.

INTEGRATING SPHERE TESTING

A spectroradiometer and integrating sphere were used to measure the spectral distribution for each EUT resulting in photometric and colorimetric data. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature was measured at a position inside the sphere and stabilization procedures to LM-79 were followed.

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

A Type C Mirror Goniophotometer system was used to measure the luminous intensity (candela) at each angle of distribution for the EUT. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature was measured at a position near the EUT at equal height and stabilization procedures to LM-79 were followed.

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	LN2-FL-M-3500K-4'	NA

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)

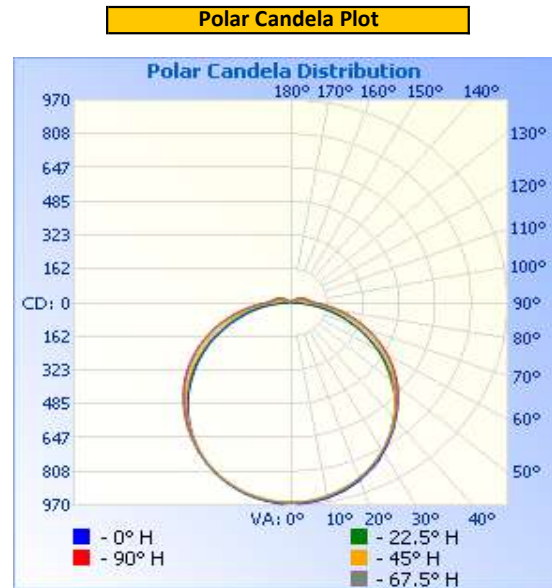
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.01	299.7	35.88	0.997

Light Output (lm)	Lumen Efficacy (lm/W)
3162.2	88.1

INTENSITY SUMMARY - CANDELA

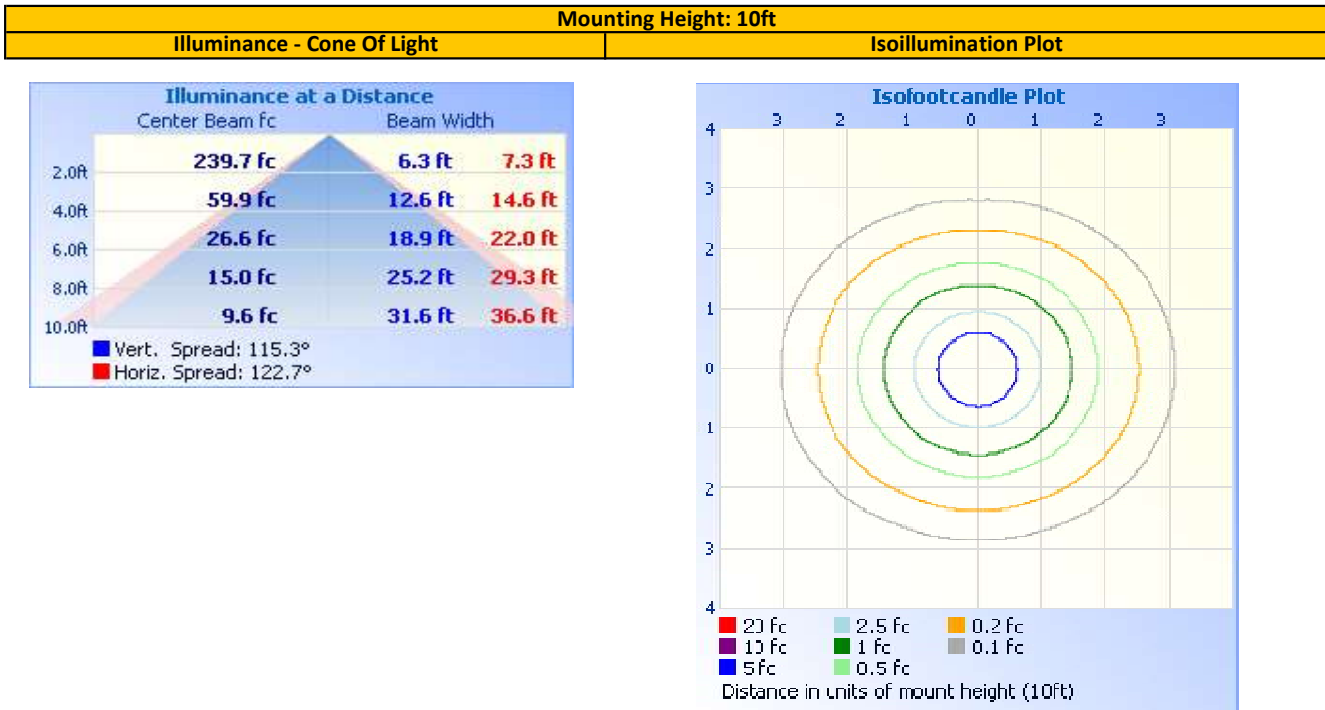
Angle	0	22.5	45	67.5	90
0	959	959	959	959	959
5	961	955	952	956	954
10	951	944	939	943	942
15	932	925	919	924	922
20	905	897	892	896	897
25	872	863	859	863	864
30	828	823	820	822	824
35	781	773	772	778	780
40	726	719	720	727	730
45	668	665	663	674	679
50	600	590	600	617	625
55	525	520	538	557	565
60	451	448	469	493	501
65	372	369	400	425	434
70	290	293	329	354	364
75	211	221	257	285	295
80	137	152	189	216	227
85	66	89	125	154	163
90	4	36	71	100	109
95	0	25	56	79	87
100	0	19	48	69	77
105	0	12	40	60	68
110	0	8	33	52	58
115	0	6	21	43	48
120	0	5	15	32	41
125	0	4	10	21	25
130	0	3	8	15	18
135	0	0	0	9	12
140	0	0	0	8	9
145	0	0	0	0	0
150	0	0	0	0	0
155	0	0	0	0	0
160	0	0	0	0	0
165	0	0	0	0	0
170	0	0	0	0	0
175	0	0	0	0	0
180	0	0	0	0	0

Entire luminous intensity matrix found in .IES file



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ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	748.9	23.7%	0-10	90.8	2.9%
0-40	1,233.7	39.0%	10-20	260.6	8.2%
0-60	2,229.5	70.5%	20-30	397.5	12.6%
60-90	798.8	25.3%	30-40	484.8	15.3%
70-100	461.6	14.6%	40-50	513.7	16.2%
90-120	120.0	3.8%	50-60	482.1	15.2%
0-90	3,028.2	95.8%	60-70	394.7	12.5%
90-180	134.0	4.2%	70-80	269.7	8.5%
0-180	3,162.2	100.0%	80-90	134.4	4.2%
			90-100	57.6	1.8%
			100-110	39.0	1.2%
			110-120	23.4	0.7%
			120-130	10.2	0.3%
			130-140	3.3	0.1%
			140-150	0.4	0.0%
			150-160	0.0	0.0%
			160-170	0.0	0.0%
			170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

REPORT NO. 104712003LAX-003

Test Configuration	Tested Model No.	Pass/Fail/NA
1	LN2-FL-M-3500K-4'	NA

PHOTOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)

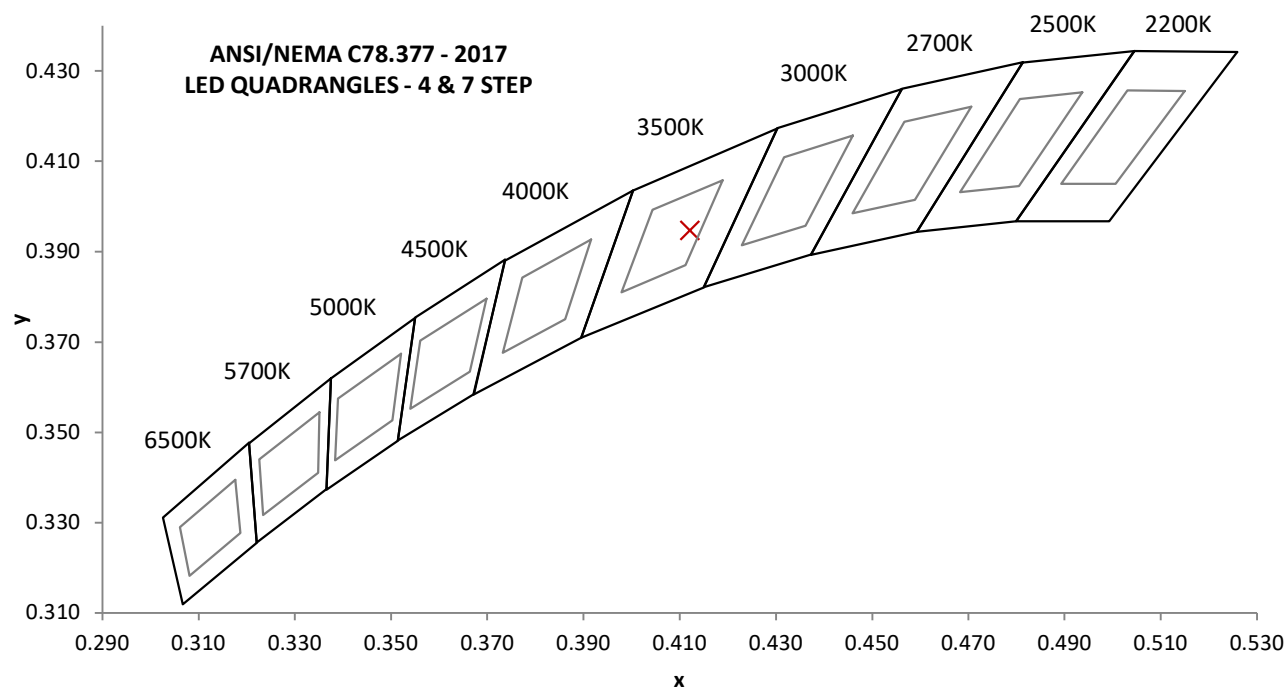
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.00	303.1	36.28	0.998	5.78
277.00	138.10	36.75	0.960	14.69

Measured at 120(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
3255.6	89.7	3385	81.4	10.2

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0002	0.412	0.395	0.239	0.514

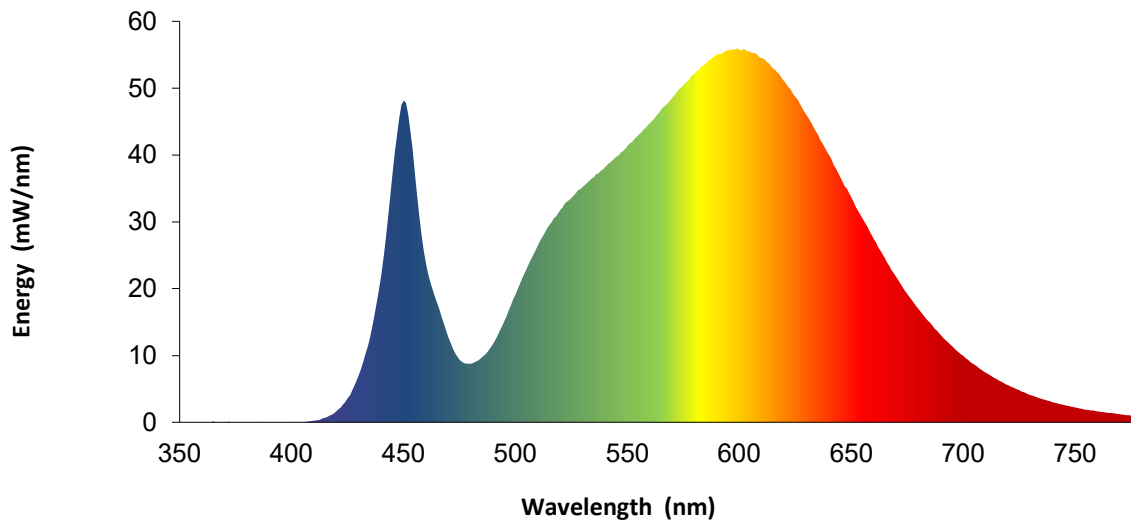


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.0		460	23.7		570	48.6		680	17.0
355	0.0		465	17.8		575	50.5		685	14.9
360	0.0		470	12.7		580	52.2		690	13.0
365	0.1		475	9.4		585	53.7		695	11.4
370	0.0		480	8.8		590	55.1		700	9.9
375	0.0		485	9.7		595	55.7		705	8.6
380	0.0		490	11.8		600	55.8		710	7.4
385	0.1		495	15.2		605	55.4		715	6.4
390	0.0		500	19.2		610	54.5		720	5.6
395	0.0		505	23.0		615	53.0		725	4.8
400	0.0		510	26.5		620	51.0		730	4.1
405	0.1		515	29.5		625	48.7		735	3.5
410	0.3		520	31.8		630	46.0		740	3.0
415	0.7		525	33.6		635	43.1		745	2.6
420	1.7		530	35.3		640	40.0		750	2.2
425	3.6		535	36.7		645	36.8		755	1.9
430	7.1		540	38.2		650	33.6		760	1.6
435	12.7		545	39.7		655	30.4		765	1.4
440	22.0		550	41.4		660	27.5		770	1.2
445	37.1		555	43.1		665	24.6		775	1.0
450	48.1		560	44.8		670	21.7		780	0.9
455	37.3		565	46.7		675	19.2		---	---

Without correction of sample absorption.



Portrayed color in graphic is estimated by wavelength (nm) and may not be exact - it is a visual representation only

SEE ANNEX A FOR TM-30 REPORT

REPORT NO. 104712003LAX-003

[illegible]

REVISION HISTORY

#	Revision Date	Updated By	Reviewed BY	Description of Change
---	None	---	---	---
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ANNEX A - TM-30 (Not covered by NVLAP)

REPORT NO. 104712003LAX-003

Test Configuration	Tested Model No.	Pass/Fail/NA
1	LN2-FL-M-3500K-4'	NA

TM-30 REPORT

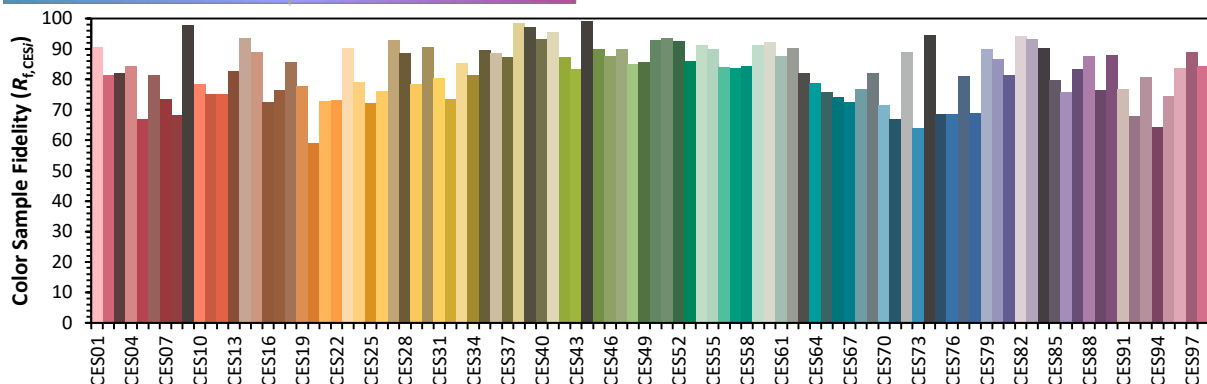
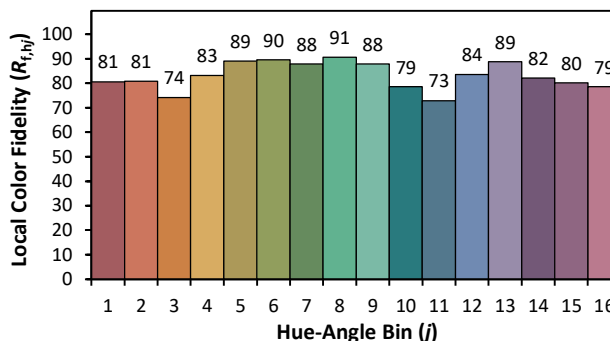
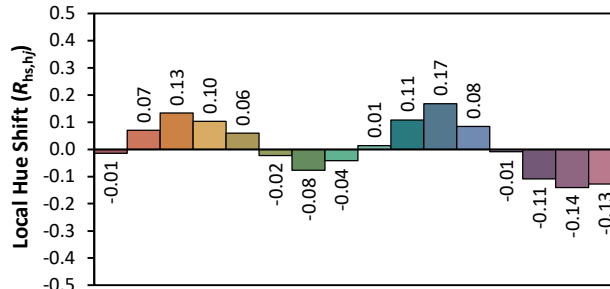
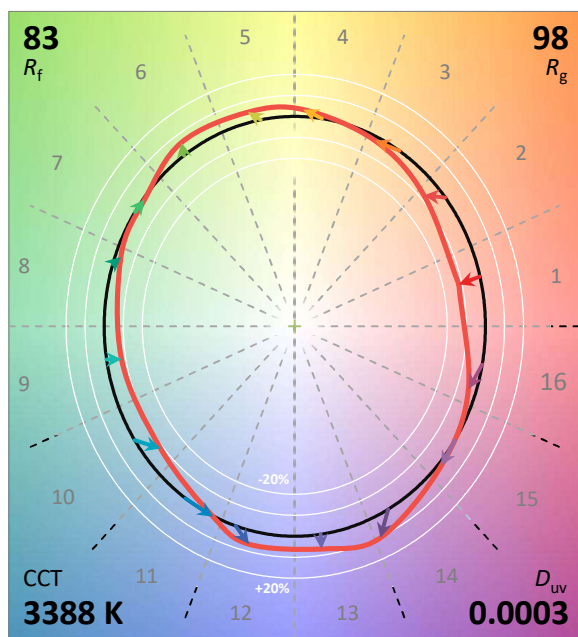
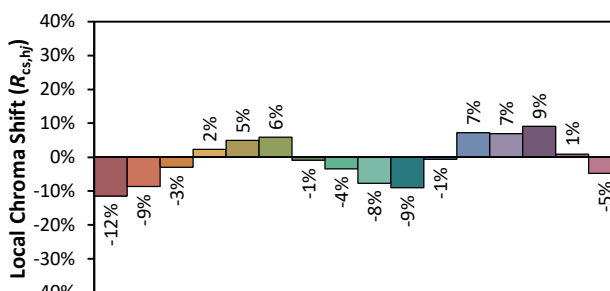
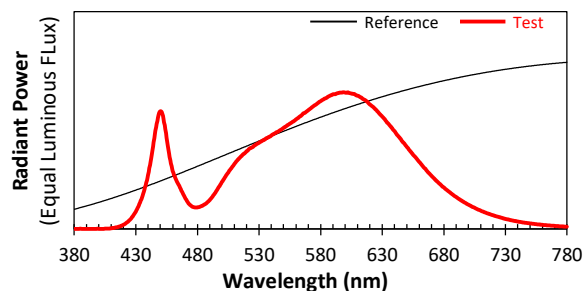
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Date: 7/6/2021

Manufacturer: PRIMUS LIGHTING INC.

Model: LN2-FL-M-3500K-4'



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4121
y 0.3947
u' 0.2385
v' 0.5139

Colors are for visual orientation purposes only. Created with the IES TM-30-18 Calculator Version 2.00.