

PRIMUS LIGHTING INC.

TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

LN2-RLR-M-3500K-4'

PRODUCT DESCRIPTION

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

PROJECT NUMBER

G104712003

REPORT NUMBER

104712003LAX-002

ISSUE DATE

July 6, 2021

REVISED DATE

None

TEST DATES

April 27, 2021 through April 29, 2021.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104712003LAX-002

MODEL NUMBER(s)

LN2-RLR-M-3500K-4'

PRODUCT DESCRIPTION

LN "LINEA" SERIES-RLR 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-RLR-M-3500K-4'	LN "LINEA" SERIES-RLR LENS-MEDIUM LUMENS-3500K-4'	prototype	4/27/18
2	LAN1804271051-002	--	2" WIDE LINEAR LED ROUND LENS	prototype	4/27/18

TESTED SAMPLE CONFIGURATIONS

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

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	LN2-RLR-M-3500K-4'
Product Description:	LN "LINEA" SERIES-RLR 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)	3391.4	3460.0
Input Power (W) @ 120 (Vac)	35.87	35.87
Lumen Efficacy (lm/W)	94.5	96.5
Input Power Factor (I) @ 120 (Vac)	0.997	0.997

Criteria	Results
Input ATHD (%) @ 120 (Vac)	5.92
Correlated Color Temperature (K)	3421
Color Rendering Index - Ra (I)	81.8
Color Rendering Index - R9 (I)	12.0
Duv (I)	0.0006
Chromaticity Coordinate (x)	0.409
Chromaticity Coordinate (y)	0.392
Chromaticity Coordinate (u')	0.238
Chromaticity Coordinate (v')	0.512
Input Power (W) @ 277 (Vac)	36.64
Input Power Factor (I) @ 277 (Vac)	0.960
Input ATHD (%) @ 277 (Vac)	14.79

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-RLR-M-3500K-4'	NA

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

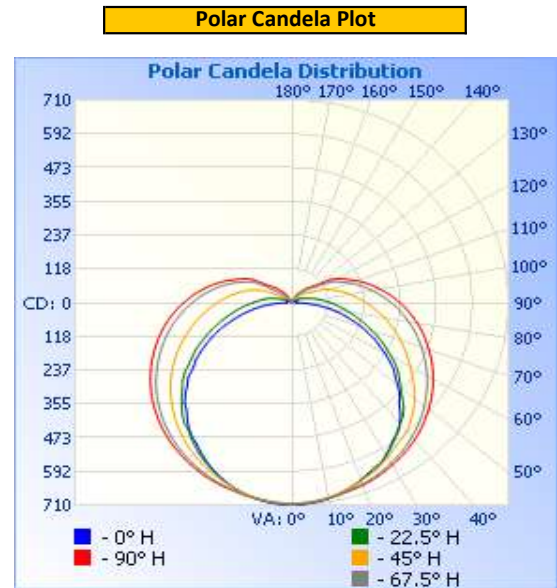
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.00	299.7	35.87	0.997

Light Output (lm)	Lumen Efficacy (lm/W)
3391.4	94.5

INTENSITY SUMMARY - CANDELA

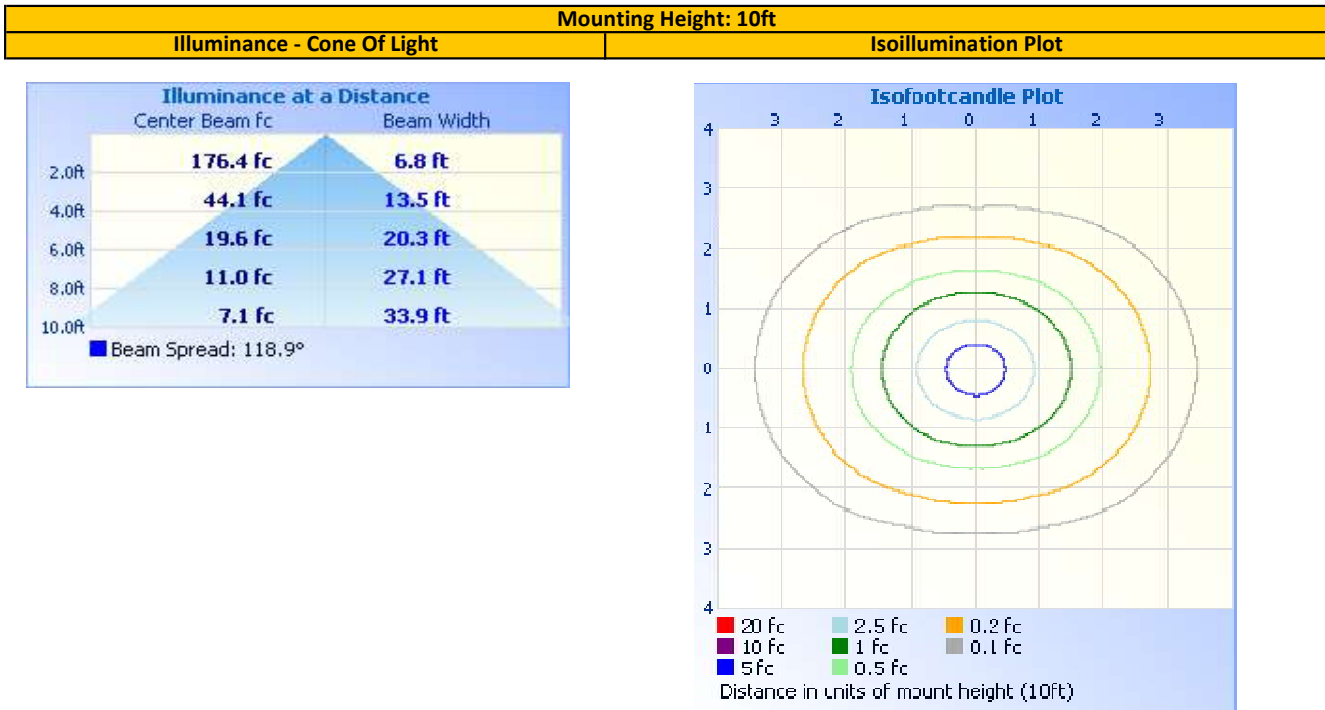
Angle	0	22.5	45	67.5	90
0	705	705	705	705	705
5	706	704	700	703	702
10	698	695	693	696	696
15	683	681	680	686	688
20	663	662	665	677	681
25	647	638	648	665	671
30	617	620	627	650	658
35	582	586	604	633	644
40	551	552	587	614	626
45	498	519	558	592	607
50	455	466	525	567	585
55	408	426	487	540	561
60	351	377	449	512	535
65	299	327	413	483	507
70	240	277	378	452	478
75	182	231	343	421	449
80	130	191	308	390	418
85	73	157	275	358	386
90	12	127	244	326	354
95	18	102	214	294	322
100	15	79	186	263	290
105	14	58	159	232	258
110	12	43	135	201	226
115	11	34	108	173	194
120	10	27	75	145	167
125	9	19	60	99	123
130	8	11	48	78	89
135	8	7	38	61	71
140	7	6	26	47	54
145	6	6	14	33	40
150	6	6	5	20	26
155	6	5	4	4	8
160	5	5	4	0	3
165	5	5	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										
<div></div>	Zone	Lumens	Luminaire	<div></div>	Zone	Lumens	Total	Zone	Lumens	Total
	0-30	560.7	16.5%		0-10	66.8	2.0%	90-100	213.4	6.3%
	0-40	941.4	27.8%		10-20	193.2	5.7%	100-110	155.6	4.6%
	0-60	1,800.7	53.1%		20-30	300.7	8.9%	110-120	101.3	3.0%
	60-90	1,028.0	30.3%		30-40	380.7	11.2%	120-130	53.2	1.6%
	70-100	838.9	24.7%		40-50	426.7	12.6%	130-140	25.2	0.7%
	90-120	470.3	13.9%		50-60	432.5	12.8%	140-150	10.9	0.3%
	0-90	2,828.6	83.4%		60-70	402.5	11.9%	150-160	2.9	0.1%
	90-180	562.7	16.6%		70-80	346.9	10.2%	160-170	0.3	0.0%
	0-180	3,391.4	100.0%		80-90	278.5	8.2%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

REPORT NO. 104712003LAX-002

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

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

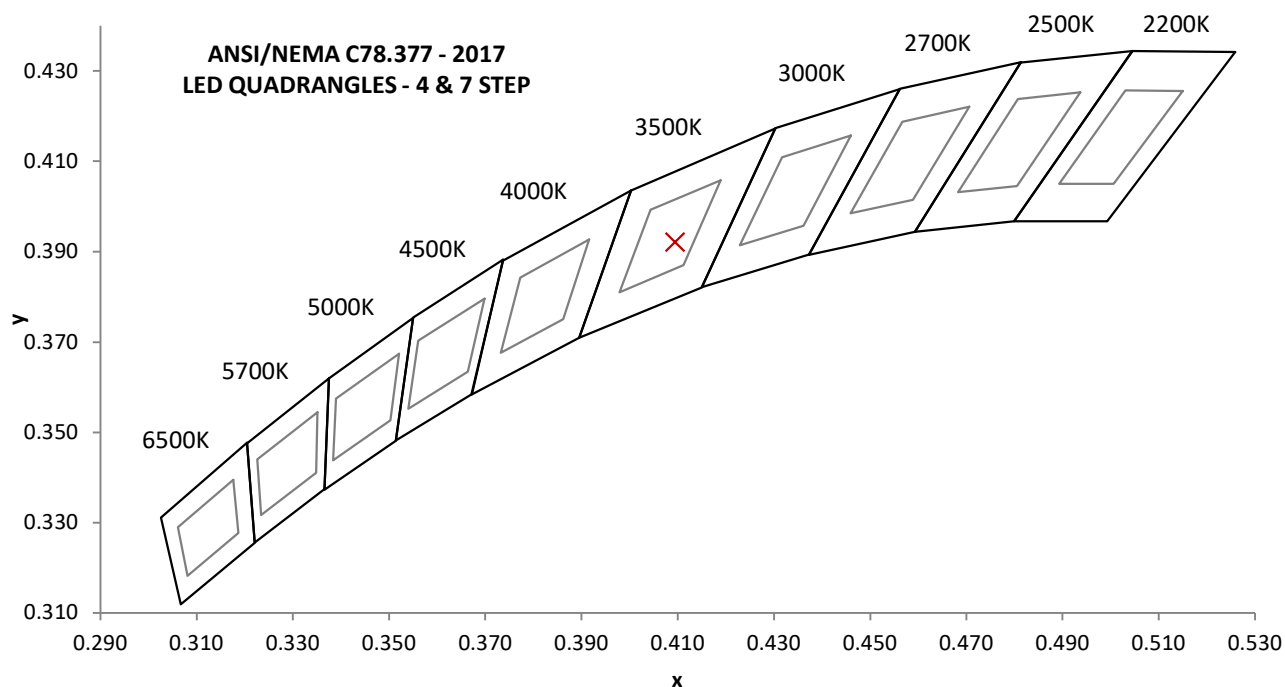
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.00	299.6	35.87	0.997	5.92
277.00	137.90	36.64	0.960	14.79

Measured at 120(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
3460.0	96.5	3421	81.8	12.0

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0006	0.409	0.392	0.238	0.5120

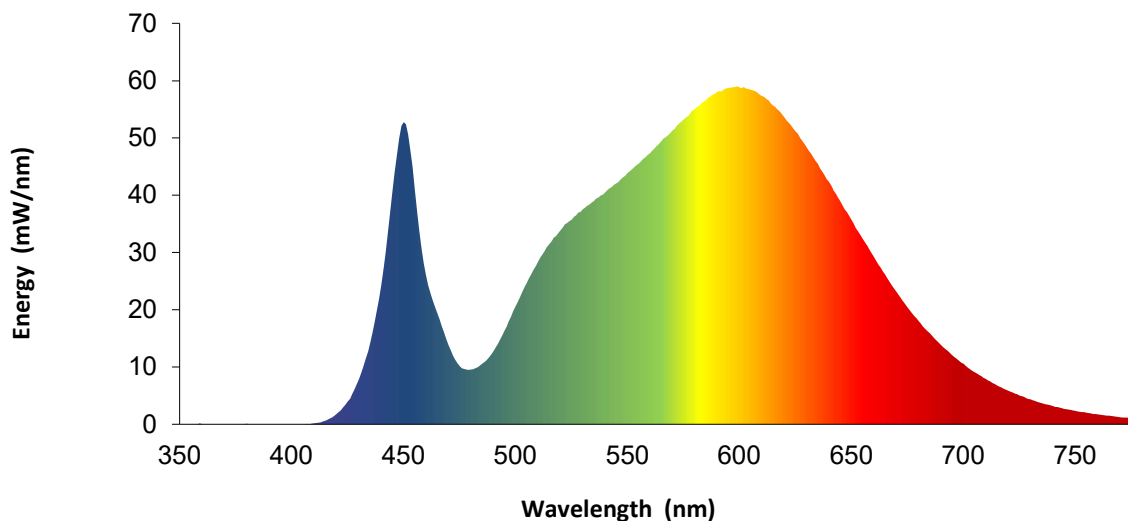


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.0		460	26.0		570	51.3		680	18.1
355	0.0		465	19.5		575	53.2		685	15.9
360	0.0		470	13.9		580	55.0		690	13.8
365	0.0		475	10.2		585	56.6		695	12.1
370	0.0		480	9.6		590	58.1		700	10.5
375	0.0		485	10.5		595	58.8		705	9.1
380	0.1		490	12.7		600	58.8		710	7.9
385	0.0		495	16.3		605	58.4		715	6.8
390	0.0		500	20.6		610	57.4		720	5.9
395	0.0		505	24.7		615	55.7		725	5.0
400	0.0		510	28.4		620	53.6		730	4.3
405	0.0		515	31.5		625	51.2		735	3.7
410	0.2		520	33.9		630	48.4		740	3.2
415	0.6		525	35.7		635	45.4		745	2.7
420	1.8		530	37.6		640	42.3		750	2.3
425	4.0		535	39.0		645	39.0		755	2.0
430	7.8		540	40.6		650	35.7		760	1.7
435	14.1		545	42.1		655	32.4		765	1.5
440	24.2		550	43.9		660	29.3		770	1.3
445	40.7		555	45.6		665	26.2		775	1.1
450	52.8		560	47.4		670	23.1		780	0.9
455	40.9		565	49.4		675	20.5		---	---

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

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REVISION HISTORY

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ANNEX A - TM-30 (Not covered by NVLAP)

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

TM-30 REPORT

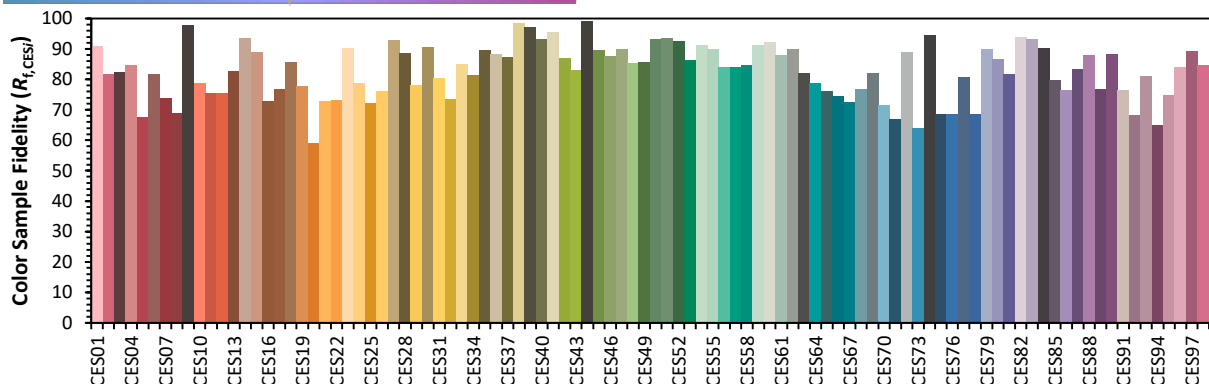
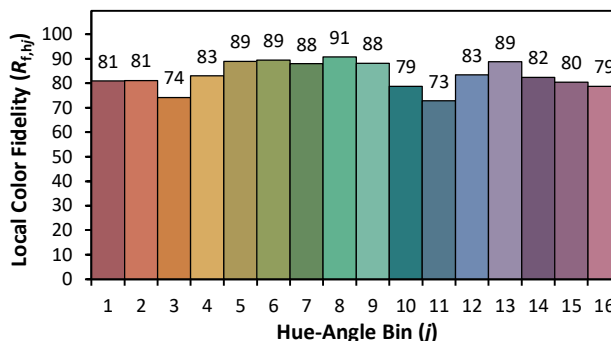
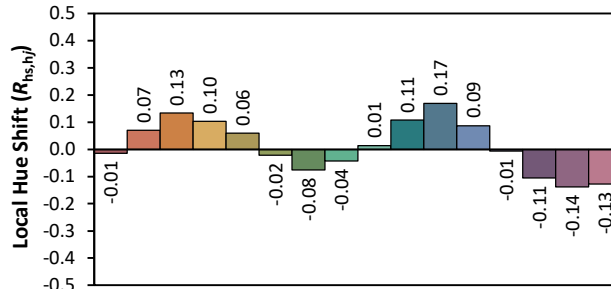
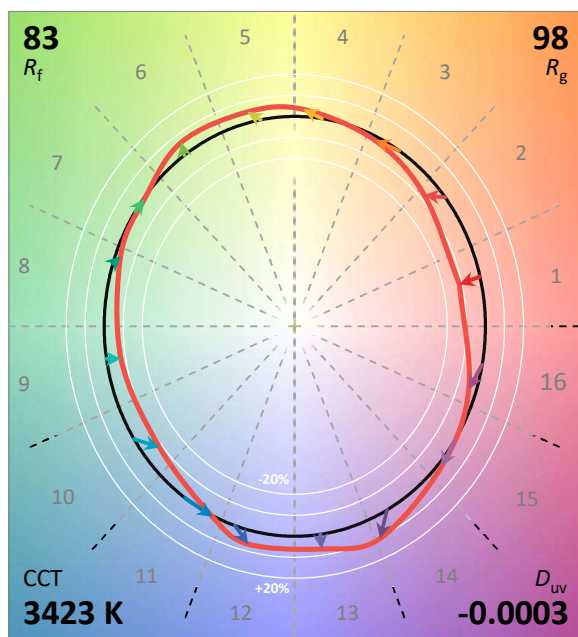
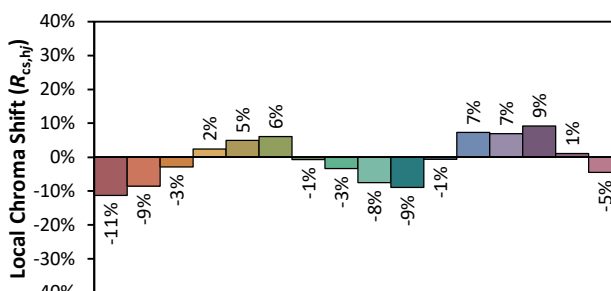
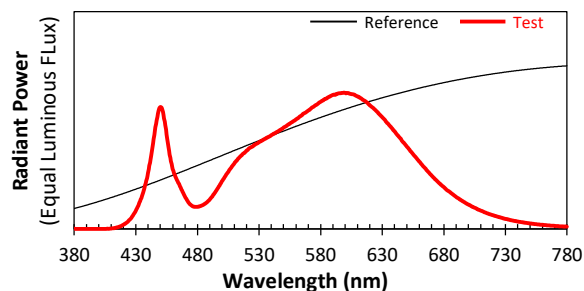
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Date: 7/6/2021

Manufacturer: PRIMUS LIGHTING INC.

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



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

x 0.4094
y 0.3921
u' 0.2378
v' 0.5125

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